AN

ILLUSTRATED FLORA

OF THE

NORTHERN UNITED STATES, CANADA

AND THE

BRITISH POSSESSIONS

FROM NEWFOUNDLAND TO THE PARALLEL OF THE SOUTHERN BOUNDARY OF VIRGINIA, AND FROM THE ATLANTIC OCEAN WESTWARD TO THE 102D MERIDIAN

BY

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CHIEFLY PREPARED BY PROFESSOR BRITTON, WITH THE ASSISTANCE OF SPECIALISTS IN SEVERAL GROUPS; THE FIGURES ALSO DRAWN UNDER HIS SUPERVISION

IN THREE VOLUMES

VOL. II

PORTULACACEAE TO MENYANTHACEAE

PORTULACA TO BUCKBEAN

NEW YORK

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SYMBOLS USED.

° is used after figures to indicate feet.
′ is used after figures to indicate inches.
″ is used after figures to indicate lines, or twelfths of an inch.
˘ over syllables indicates the accent, and the *short* English sound of the vowel.
¯ over syllables indicates the accent, and the long, broad, open or close English sound of the vowel.

In the Metric System

The metre = 39.37 inches, or 3 feet 3.37 inches.
The decimetre = 3.94 inches.
The centimetre = $\frac{2}{5}$ of an inch, or $4\frac{1}{4}$ lines.
The millimetre = $\frac{1}{25}$ of an inch, or $\frac{1}{2}$ a line.
$2\frac{1}{2}$ millimetres = 1 line.

} very nearly.

New York, May 31, 1897.

ILLUSTRATED FLORA.

VOL. II.

Family 20. **PORTULACÀCEAE** Reichenb. Consp. 161. 1828.

PURSLANE FAMILY.

Herbs, generally fleshy or succulent, rarely somewhat woody, with alternate or opposite leaves, and regular perfect but unsymmetrical flowers. Sepals commonly 2 (rarely 5). Petals 4 or 5, rarely more, hypogynous, entire or emarginate, imbricated. Stamens hypogynous, equal in number to the petals or fewer, rarely more; filaments filiform; anthers 2-celled, longitudinally dehiscent. Ovary 1-celled; style 2–3-cleft or 2–3-divided, the divisions stigmatic on the inner side; ovules 2–∞, amphitropous. Capsule membranous or crustaceous, circumscissile, or dehiscent by 3 valves. Seeds 2–∞, reniform-globose or compressed; embryo curved.

About 150 species, mostly natives of America.

Calyx free from the ovary; capsule 3-valved.
- Seeds numerous; stamens 5–∞. — 1. *Talinum.*
- Seeds not more than 6; stamens 2–5.
  - Petals distinct or very nearly so, and stamens 5 in our species. — 2. *Claytonia.*
  - Petals united into a short tube at the base; stamens 2 or 3. — 3. *Montia.*

Calyx partly adnate to the ovary; capsule circumscissile. — 4. *Portulaca.*

1. **TALÌNUM** Adans. Fam. Pl. 2: 245. 1763.

Fleshy glabrous erect or ascending, perennial or annual herbs, with scapose or leafy stems, alternate terete or flat exstipulate leaves (terete and clustered at the base in the following species), and mainly cymose racemose or panicled flowers. Sepals 2, ovate. Petals 5, hypogynous, fugacious. Stamens as many as or more numerous than the petals and adherent to their bases. Ovary many-ovuled; style 3-lobed or 3-cleft. Capsule ovoid, oval or globose, 3-valved. Seeds numerous, borne on a central globose placenta. [Aboriginal name of a Senegal species.]

A genus of about 12 species, all but 1 or 2 natives of America. In addition to the following, about 4 others occur in the western and southwestern United States.

Flowers 5″–8″ broad; sepals deciduous.
- Stamens 10–30; capsule globose. — 1. *T. teretifolium.*
- Stamens only 5; capsule oval. — 2. *T. parviflorum.*

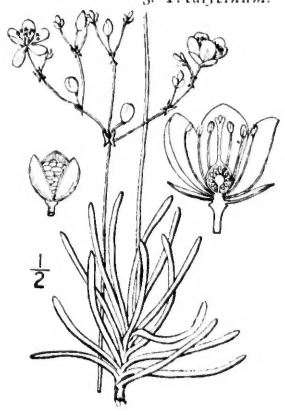
Flowers 10″–15″ broad; sepals persistent. — 3. *T. calycinum.*

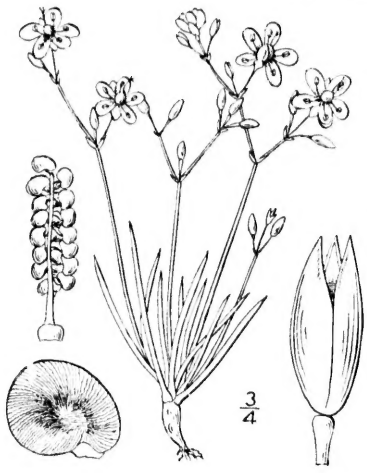
1. Talinum teretifòlium Pursh. Fameflower. (Fig. 1426.)

Talinum teretifolium Pursh, Fl. Am. Sept. 365. 1814.

Perennial, erect, 4′–12′ high, leafy at the base. Leaves linear, terete, ½′–2′ long, about 1″ wide, the base broadened and prolonged posteriorly; scape-like peduncles 1–5, terminal, branched, leafless, slender, bracted at the nodes, 3′–6′ long; cymes terminal, loose, the branches ascending or divaricate; flowers pink, 6″–8″ broad, opening for a day; sepals membranous, deciduous, ovate, obtuse, 2″ long, about half the length of the petals; stamens 10–30; style as long as the stamens; capsule globose, 2″ in diameter; bracts of the cyme ovate or ovate-lanceolate, 1″ long, prolonged posteriorly.

On dry rocks, Chester county, Pa., to Minnesota, south to Georgia and Texas. Ascends to 3800 ft. in North Carolina. May–Aug.





2. Talinum parviflòrum Nutt. Small-flowered Talinum. (Fig. 1427.)

Talinum parviflorum Nutt.; T. & G. Fl. N. A. 1: 197. 1838.

Perennial, similar to the preceding species, leafy below. Leaves terete or nearly so, linear, rather more slender, broadened at the base; scape-like peduncles very slender, 3′–8′ tall; cymes loose, their branches and pedicels ascending; flowers pink, 4″–5″ broad; sepals ovate, deciduous, acute or subacute; stamens 5 (or sometimes fewer?); style somewhat longer than the stamens; capsule oval, 2″ high, about 1″ in diameter; bracts of the cyme narrowly lanceolate, slightly prolonged posteriorly.

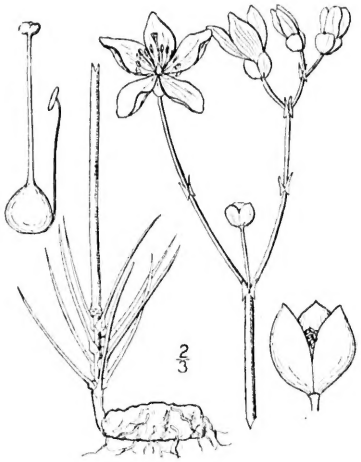
In dry soil, Minnesota to Arkansas, New Mexico and Texas. May–Sept.

3. Talinum calycìnum Engelm. Large-flowered Talinum. (Fig. 1428.)

Talinum calycinum Engelm. in Wisliz. Rep. 88. 1848.

Perennial, erect from a very thick root, slender, 6′–10′ high. Leaves nearly terete, clustered at the base, 1½′–2′ long, the base triangular-broadened, slightly prolonged posteriorly; cyme terminal, somewhat compound, scarious-bracted, its branches ascending; flowers pink, 10″–15″ broad; sepals broadly ovate, persistent, cuspidate; petals twice as long as the calyx; stamens 12–30; style twice as long as the stamens; capsule globose-ovoid, about 3″ in diameter.

In dry soil, Kansas to Texas. June.



2. CLAYTÒNIA L. Sp. Pl. 204. 1753.

Annual or perennial succulent glabrous herbs, with petioled basal leaves, and opposite or alternate cauline ones. Flowers terminal, racemose or cymose. Sepals 2, ovate, persistent. Petals 5, hypogynous, distinct, or slightly united by their bases. Stamens 5, inserted on the bases of the petals. Ovary few-ovuled; style 3-lobed or 3-cleft. Capsule ovoid or globose, 3-valved, 3–6-seeded. Seeds compressed, orbicular or reniform. [In honor of John Clayton, 1686?–1773, American botanist.]

About 25 species, mainly natives of northern North America. The genus is not well distinguished from *Montia*.

Upper leaves not connate.
Perennials; leaves linear, lanceolate, oval or ovate.
Leaves linear-lanceolate, 3′–7′ long. 1. *C. Virginica.*
Leaves ovate-lanceolate or ovate, 2′–3′ long. 2. *C. Caroliniana.*
Annual, diffuse; leaves spatulate or oblanceolate. 3. *C. Chamissoi.*
Upper leaves connate, forming an orbicular disk. 4. *C. perfoliata.*

1. Claytonia Virgínica L. Spring Beauty. (Fig. 1429.)

Claytonia Virginica L. Sp. Pl. 204. 1753.

Ascending or decumbent, perennial from a deep tuberous root, stem 6′–12′ long, simple or rarely with a few branches. Leaves elongated, linear, or linear-lanceolate, obtuse or acute, narrowed into a petiole, the basal 3′–7′ long, 1″–6″ wide, the cauline shorter and opposite; raceme terminal, loose, at length 3′–5′ long, somewhat secund; flowers white or pink, with darker pink veins, 6″–10″ broad; pedicels slender, at length 1′–1½′ long and recurved; petals emarginate; capsule shorter than the sepals.

In moist woods, Nova Scotia to the Northwest Territory, south to Georgia and Texas. Very variable in the breadth of leaves. Ascends to 2400 ft. in Virginia. March–May.

2. Claytonia Caroliniàna Michx. Carolina Spring Beauty. (Fig. 1430.)

Claytonia Caroliniana Michx. Fl. Bor. Am. 1: 160. 1803.

Similar to the preceding species but sometimes more nearly erect. Basal leaves ovate-lanceolate or oblong, 1½′–3′ long, 6″–9″ wide, obtuse; stem-leaves on petioles 3″–6″ long; flowers fewer.

In damp woods, Nova Scotia to the Northwest Territory, south to North Carolina along the Alleghanies, and to Ohio and Missouri. Ascends to 5000 ft. in Virginia. March–May.

Claytonia lanceolàta Pursh, a related species, with sessile shorter stem-leaves, occurs from the Rocky Mountain region to the Pacific Coast, and probably in the extreme western portion of our territory.

3. Claytonia Chamissoi Ledeb. Chamisso's Claytonia. (Fig. 1431.)

Claytonia Chamissoi Ledeb.; Spreng. Syst. Veg. 1: 790. 1825.

Montia Chamissonis Greene, Fl. Fran. 180. 1891.

Annual, glabrous, stoloniferous at the base, stems weak, ascending or procumbent, 3′–9′ long. Leaves spatulate or oblanceolate, obtuse, narrowed into a petiole or sessile, 1′–2′ long, 3″–5″ wide; flowers few, pink, racemose, 3″–4″ broad; pedicels slender, 4″–15″ long, recurved in fruit; capsule very small.

In wet places, Minnesota to British Columbia and Alaska, south in the Rocky Mountains to New Mexico, and to California. May–June.

4. Claytonia perfoliàta Donn. Spanish Lettuce. (Fig. 1432.)

Claytonia perfoliata Donn; Willd. Sp. Pl. 1: 1186. 1798.

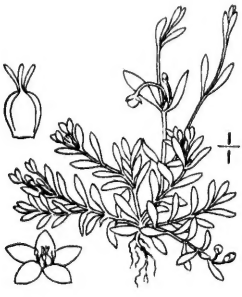
Annual, roots fibrous, stems several, erect or ascending, simple, 3′–12′ high, bearing a pair of connate-perfoliate leaves near the summit, completely or partially united into an orbicular concave disk, 2′ broad or less. Basal leaves rhomboid-ovate, long-petioled, the blade 1′ long or more, obtuse or acute at apex, narrowed into the petiole; petioles shorter than the stems; raceme usually peduncled, loosely or compactly several-flowered, sometimes compound; bracts broad, deciduous; flowers white or pink, 3″–5″ broad; petals and stamens 5; capsule globose, 1″–2″ in diameter, 2–5-seeded.

Established near Painesville, Ohio. Native from British Columbia to Mexico. April–May.

3. MÓNTIA L. Sp. Pl. 87. 1753.

Small annual glabrous herbs, with opposite fleshy leaves and minute nodding solitary or loosely racemed white flowers. Sepals 2 (rarely 3), broadly ovate, persistent. Petals 5, hypogynous, more or less united. Stamens 3 (very rarely 5), inserted on the corolla. Ovary 3-ovuled; style short, 3-parted. Capsule 3-valved, 3-seeded. Seeds nearly orbicular, compressed, minutely tuberculate; embryo peripheral. [In honor of Guiseppe Monti, Italian botanist and author of the eighteenth century.]

A genus of about 4 species, widely distributed in the colder parts of both hemispheres. In addition to the following, another occurs in Oregon.



1. Montia fontàna L. Water or Blinking Chickweed. Blinks. Water-blinks. (Fig. 1433.)

Montia fontana L. Sp. Pl. 87. 1753.

Densely tufted, very green, weak, diffuse or ascending, 1′–6′ long, freely branching. Leaves opposite, spatulate or obovate, mainly obtuse, 3″–6″ long, 1″ broad or less; flowers nodding, solitary and terminal or in a small loose leafy-bracted raceme; sepals obtuse, slightly shorter than the ovate-oblong petals; capsule globose, nearly 1″ in diameter.

In springs and wet places, St. Anne des Monts, Quebec; Maine, Nova Scotia, New Brunswick, Labrador, Newfoundland, and across arctic America, extending south in the mountains to California. Also in the Andes of South America, in Australasia and in northern Europe and Asia. Summer.

4. PORTULÀCA L. Sp. Pl. 445. 1753.

Diffuse or ascending, glabrous or pubescent fleshy herbs, with terminal flowers. Sepals 2, united at the base and partly adnate to the ovary. Petals 4–6 (mainly 5), inserted on the calyx, fugacious. Stamens 7–∞, also on the calyx. Ovary many-ovuled; style deeply 3–9-cleft or parted. Capsule membranous, dehiscent by a lid, many-seeded. [Latin, in allusion to the purging qualities of some species.]

A genus of about 20 species, all but 2 or 3 natives of America. In addition to the following, some 7 others occur in the southern United States.

Glabrous throughout; flowers small, yellow.
- Leaves mainly rounded at the apex; seeds minutely rugose. 1. *P. oleracea.*
- Leaves mainly retuse; seeds prominently tuberculate. 2. *P. retusa.*

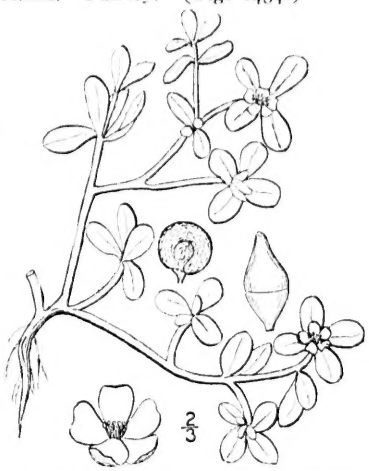
Pilose-pubescent, especially in the axils.
- Flowers red, 4″–6″ broad. 3. *P. pilosa.*
- Flowers variously colored, 1′–2′ broad. 4. *P. grandiflora.*

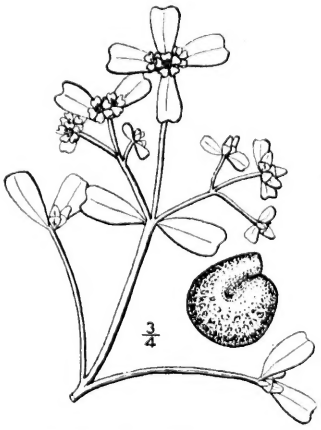
1. **Portulaca oleràcea** L. Purslane. Pussley. (Fig. 1434.)

Portulaca oleracea L. Sp. Pl. 445. 1753.

Annual, prostrate, freely branching from a deep central root, branches 4′–10′ long. Leaves alternate and clustered at the ends of the branches, obovate or cuneate, 3″–10″ long, rounded at the apex, very fleshy; flower-buds flat; flowers solitary and sessile, 2″–3″ broad, yellow, opening in bright sunshine for a few hours in the morning; sepals broad, keeled, acutish; style 4–6-parted; capsule 3″–5″ long; seeds finely rugose, about ¼″ long.

In fields and waste places, common throughout our area, and in warm and tropical America. Native in the southwest, but naturalized northward. Widely naturalized as a weed in the warmer parts of the Old World. Summer.





2. **Portulaca retùsa** Engelm. Notched Purslane. (Fig. 1435.)

Portulaca retusa Engelm. Bost. Journ. Nat. Hist. 6: 154. 1850.

Closely resembles the preceding species. Leaves cuneate, generally broader, mostly retuse or emarginate, but some of them rounded; sepals broad, obtusish, carinate-winged; style larger, 3–4-cleft; capsule 2″–3″ long; seeds distinctly tuberculate, nearly ½″ long; petals smaller than those of *P. oleracea* and the flowers opening earlier in the morning than those of that species, where the two grow together.

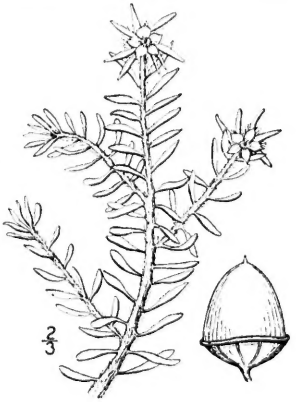
Minnesota (?), Missouri and Arkansas, to Texas, west to Nevada. Growing in large patches, sometimes several feet in diameter. Summer.

3. **Portulaca pilòsa** L. Hairy Portulaca. (Fig. 1436.)

Portulaca pilosa L. Sp. Pl. 445. 1753.

Annual, spreading or ascending from a deep root, more or less densely pilose-pubescent, with small tufts of light-colored hairs in the axils of the leaves. Branches 2′–6′ long; leaves linear, terete, obtuse, 4″–8″ long, about 1″ wide, alternate, and clustered at the ends of the branches; sepals oblong, acute, membranous, not carinate, deciduous with the operculum of the capsule; flowers red, 4″–6″ broad; stamens numerous; style 5–6-parted; seeds minutely tuberculate.

In dry soil, North Carolina to Florida, Kansas, Texas and Mexico, west to California. Also throughout tropical America. Summer.



4. Portulaca grandiflòra Hook. Garden Portulaca. Sun-plant. (Fig. 1437.)

Portulaca grandiflora Hook. Bot. Mag. *pl.* 2885. 1829.

Ascending or spreading, sometimes densely pilose, but often with but a few scattered hairs and tufts of others in the axils. Branches 6′–12′ long; leaves alternate, and clustered at the ends of the branches, terete, ½′–1′ long, about 1″ wide; flowers 1′–2′ broad, pink, yellow, red, or white, very showy, open in sunshine only; sepals broad, obtuse, scarious-margined; petals obovate; capsule ovoid; seeds gray, shining.

In waste places, occasionally escaped from gardens. Introduced from South America. Summer. Cultivated in a large number of forms.

Family 21. **CARYOPHYLLÀCEAE** Reichenb. Consp. 206. 1828.

PINK FAMILY.

Annual or perennial herbs, often swollen at the nodes, with opposite entire exstipulate or stipulate leaves, and perfect or rarely dioecious regular flowers. Sepals 4 or 5, persistent, separate or united into a calyx-tube. Petals equal in number to the sepals or none. Stamens twice as many as the sepals or fewer, hypogynous or perigynous; anthers longitudinally dehiscent. Ovary 1, mainly 1-celled (rarely 3–5-celled); styles 2–5; ovules and seeds several or many (in all our species), attached to a central column. Fruit generally membranous, a capsule, dehiscent by valves or teeth, or an indehiscent achene or utricle. Seeds mainly amphitropous; embryo more or less curved and peripheral to the endosperm, rarely straight; cotyledons mainly incumbent.

About seventy genera and about 1500 species, widely distributed, most abundant in the northern hemisphere.

☆ **Calyx of united sepals, tubular or ovoid.**

Calyx-ribs at least twice as many as the teeth, running both into the teeth and into the sinuses.
- Styles 5, alternate with the foliaceous calyx teeth. 1. *Agrostemma.*
- Styles 3–5, when 5, opposite the short calyx-teeth.
  - Styles 5, capsule several-celled at the base. 2. *Viscaria.*
  - Styles 3, rarely 4. 3. *Silene.*
  - Styles 5, capsule 1-celled to the base. 4. *Lychnis.*

Calyx 5-ribbed, 5-nerved, or nerveless, or striate-nerved.
- Calyx conspicuously scarious between its green nerves.
  - Calyx not bracteolate at the base. 5. *Gypsophila.*
  - Calyx bracteolate at the base. 6. *Tunica.*
- Calyx not at all scarious.
  - Petals appendaged at the base of the blade. 7. *Saponaria.*
  - Petals not appendaged at the base of the blade.
    - Calyx strongly 5-angled, not bracteolate. 8. *Vaccaria.*
    - Calyx terete or nearly so, subtended by bractlets. 9. *Dianthus.*

☆☆ **Calyx of distinct sepals, or the sepals united only at the base.**

Fruit a capsule, dehiscent by apical teeth or by valves.
- Styles separate to the base; stipules wanting.
  - Plants not fleshy; disk of the flower inconspicuous or none.
    - Petals deeply 2-cleft or 2-parted (rarely none).
      - Capsule ovoid or oblong, dehiscent by valves. 10. *Alsine.*
      - Capsule cylindric, commonly curved, dehiscent by teeth. 11. *Cerastium.*
    - Petals entire or emarginate (rarely none).
      - Capsule cylindric. 12. *Holosteum.*
      - Capsule ovoid or oblong.
        - Styles as many as the sepals.
          - Styles opposite the sepals. 13. *Moenchia.*
          - Styles alternate with the sepals. 14. *Sagina.*
        - Styles fewer than the sepals.
          - Seeds not appendaged by a strophiole. 15. *Arenaria.*
          - Seeds strophiolate. 16. *Mochringia.*
  - Plants fleshy, maritime; disk conspicuous, 8–10-lobed. 17. *Ammodenia.*
- Styles separate to the base; stipules present, scarious.
  - Styles and capsule-valves 5. 18. *Spergula.*
  - Styles and capsule-valves 3. 19. *Tissa.*
- Styles united below; southwestern herbs with subulate leaves. 20. *Loeflingia.*

Fruit an indehiscent or irregularly bursting utricle or achene.
Leaves stipulate.
Sepals awn-tipped. 21. *Paronychia.*
Sepals awnless. 22. *Anychia.*
Leaves not stipulate. 23. *Scleranthus.*

1. AGROSTÉMMA L. Sp. Pl. 435. 1753.

Annual pubescent often branching herbs, with linear or linear-lanceolate acute or acuminate sessile leaves, and large red or white erect flowers, solitary at the ends of long axillary peduncles. Calyx oblong, not inflated, narrowed at the throat, 10-ribbed, 5-lobed, the lobes linear, elongated and foliaceous. Petals 5, shorter than the calyx-lobes, their blades obovate or cuneate, emarginate, not appendaged; stamens 10. Styles 5, alternate with the calyx-lobes, opposite the petals. Capsule 1-celled. Seeds numerous, black. [Greek, a field-garland.]

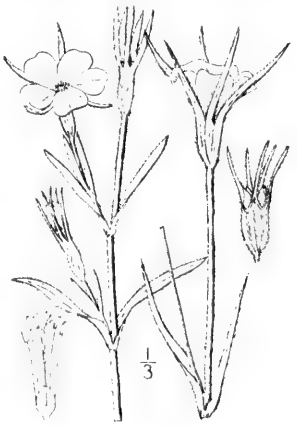
Two known species, natives of Europe and Asia.

1. Agrostemma Githàgo L. Corn Cockle. Corn Rose. Corn Campion. (Fig. 1438.)

Agrostemma Githago L. Sp. Pl. 435. 1753.

Lychnis Githago Scop. Fl. Carn. Ed. 2, 1: 310. 1772.

Erect, 1°–3° high, simple or with few erect branches, densely pubescent throughout with whitish appressed hairs. Leaves linear-lanceolate, acute or long-acuminate, erect, 2′–4′ long, 2″–3″ wide, the lowest narrowed at the base; flowers red, 1′–3′ broad; peduncles stout, 3′–8′ long, erect; calyx ovoid, its lobes linear, foliaceous, 3 or 4 times the length of the tube and much exceeding the petals, deciduous in fruit; petals usually slightly emarginate, the blade obovate-cuneate.



In grain fields and waste places, frequent or occasional throughout our area. Adventive from Europe, occurring also in northern Asia. Called also Crown-of-the-Field. July-Sept.

2. VISCÀRIA Roehl. Deutsch. Fl. 2: 37. 1796.

Perennial or biennial glabrous herbs, with erect, nearly or quite simple stems, and narrow leaves, the basal densely tufted, those of the stem sessile, and small red or rarely white flowers in clustered terminal cymes, the inflorescence in our species almost capitate. Calyx oblong-campanulate, not inflated, 4–5-toothed, 8–10-ribbed. Petals 4 or 5, much exceeding the calyx, each with a 2-cleft appendage at the base of the obovate emarginate blade. Stamens 10, exserted. Styles opposite the calyx-teeth, alternate with the petals. Capsule several-celled at the base, its teeth as many as the styles. [Latin, glutinous.]

About 5 species, the following of arctic and subarctic regions; the others European and Asiatic.

1. Viscaria alpina (L.) Roehl. Red Alpine Campion. (Fig. 1439.)

Lychnis alpina L. Sp. Pl. 436. 1753.

Viscaria alpina Roehl. Deutsch. Fl. 2: 37. 1796.

Tufted, 3′–12′ high, rather stout, glabrous, somewhat glaucous, not viscid. Basal leaves narrowly oblanceolate or linear, densely rosulate, ¼′–1½′ long, 1″–2″ wide; stem-leaves distant, linear-lanceolate, erect, acute or obtuse, about 1′ long; inflorescence dense, terminal, ½′–1′ broad; bracts small, membranous; flowers pink, 3″–4″ wide; calyx campanulate, 2″ long, its teeth short, rounded; petals about twice the length of the calyx, obovate, 2-lobed; appendages minute.

Mt. Albert, Gaspé, Quebec; Labrador, Newfoundland, Hudson Bay, Greenland, and in arctic and alpine Europe and Asia. Summer.

3. SILÈNE L. Sp. Pl. 416. 1753.

Annual or perennial herbs, with clustered or solitary, mainly pink red or white flowers. Calyx more or less inflated, tubular, ovoid or campanulate, 5-toothed or 5-cleft, 10-many-nerved, not bracted at the base. Petals 5, narrow, clawed. Stamens 10. Styles 3 (rarely 4 or 5); ovary 1-celled, or incompletely 2–4-celled. Pod dehiscent by 6 or rarely 3 apical teeth. Seeds mainly spiny or tubercled. [Greek, saliva, in allusion to the viscid secretions of many species]

About 250 species of wide geographic distribution. In addition to the following, some 35 others occur in the southern and western parts of the continent.

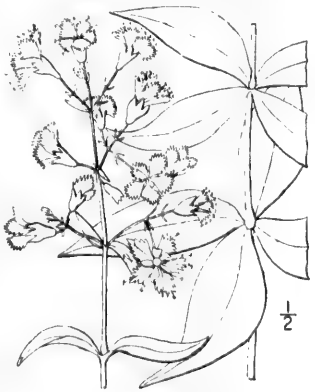
Dwarf, arctic-alpine; flowers solitary. 1. *S. acaulis.*
Erect or ascending herbs; flowers clustered (sometimes solitary in nos. 3–7).
  Leaves or some of them verticillate in 4's. 2. *S. stellata.*
  Leaves all opposite.
    Calyx much inflated and bladdery.
      Flowers few, leafy-bracted. 3. *S. alba.*
      Flowers numerous, in leafless cymes. 4. *S. vulgaris.*
    Calyx merely expanded by the ripening pod.
      Flowers cymose or paniculate.
        Day-blooming; flowers rarely white, mostly pink or red.
          Perennials, more or less viscid-pubescent.
            Petals 2-cleft, 2-lobed, or irregularly incised, scarlet or crimson.
              Leaves lanceolate or spatulate; flowers numerous.
                Flowers in slender panicles, nodding. 5. *S. nutans.*
                Flowers in terminal cymes, erect. 6. *S. Virginica.*
              Leaves broadly oval; flowers few or solitary. 7. *S. rotundifolia.*
            Petals erose, entire, or emarginate.
              Petals scarlet; plant 3°–4° tall. 8. *S. regia.*
              Petals pink; plant 4'–10' high. 9. *S. Caroliniana.*
          Annuals, glutinous at or below the nodes.
            Calyx ovoid; flowers small, paniculate. 10. *S. antirrhina.*
            Calyx club-shaped; flowers large, cymose. 11. *S. Armeria.*
        Night-blooming; flowers large, white. 12. *S. noctiflora.*
      Flowers spicate or racemose, short-pedicelled.
        Spicate raceme simple; flowers small. 13. *S. Anglica.*
        Raceme forked; flowers 6''–8'' broad. 14. *S. dichotoma.*
      Flowers axillary and terminal, slender-pedicelled; western. 15. *S. Menziesii.*

1. Silene acàulis L. Moss Campion. (Fig. 1440.)

Silene acaulis L. Sp. Pl. Ed. 2, 603. 1762.

Perennial, puberulent or glabrous, branched, densely tufted, 1'–3' high. Leaves sessile, crowded, linear, 4''–6'' long, about ½'' wide, obtuse or acutish at the apex, the margins ciliate-serrulate; flowers solitary at the ends of the branches, sessile or slender-peduncled, 4''–6'' broad, purple or purplish; calyx campanulate, glabrous, 4'' high; petals entire or emarginate, with a scale at the base of the blade; pod oblong, equalling or exceeding the calyx.

Summits of the White Mountains, N. H.; Gaspé, Quebec; Cape Breton Island, Labrador and throughout arctic America, south in the higher Rocky Mountains to Arizona. Also in arctic and alpine Europe and Asia. Called also Cushion Pink. Summer.



2. Silene stellàta (L.) Ait. Starry Campion. (Fig. 1441.)

Cucubalus stellatus L. Sp. Pl. 414. 1753.
Silene stellata Ait. f. Hort. Kew. 3: 84. 1811.

Perennial, erect, 2°–3½° high, densely and minutely rough-pubescent throughout. Leaves ovate-lanceolate, acuminate, 2'–4' long, ½'–1' wide, verticillate in 4's or the lowest opposite, their margins finely ciliate; flowers white, 7''–10'' broad, in panicled cymes, forming a large showy inflorescence; calyx campanulate, inflated, 7''–8'' high, its teeth triangular, acute; petals crownless, fimbriate, about equalling the stamens; pod globose-ovoid, about the length of the calyx.

In woods, Rhode Island to Niagara and Minnesota, south to South Carolina and Arkansas. June–Aug.

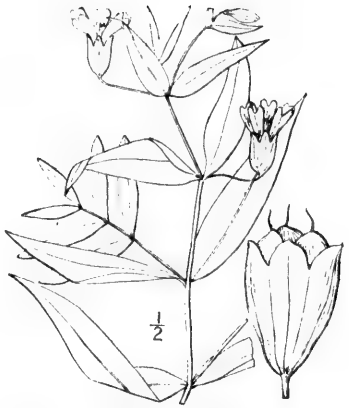
Silene ovàta Pursh, which has the habit of this species but the leaves opposite, is recorded by Pursh from "the western parts of Virginia and Carolina," but is not definitely known from Virginia.

3. Silene álba Muhl. Western White Campion. (Fig. 1442.)

Silene alba Muhl. Cat. 45. 1813.
Cucubalus niveus Nutt. Gen. 1: 287. 1818.
Silene nivea Otth in DC. Prodr. 1: 377. 1824.

Perennial, ascending or erect, rather weak, simple, or divergently branched above, minutely puberulent or glabrate. Leaves lanceolate or oblong-lanceolate, 3′–5′ long, 5″–8″ wide, acuminate, the upper gradually smaller, and subtending the flowers; pedicels about 1′ long, divaricate; flowers few, often solitary, white, about 10″ broad; calyx inflated, elongated-campanulate, pubescent, its teeth ovate, obtuse, more or less scarious-margined; petals cuneate, 2-cleft, or 2-lobed, minutely crowned.

In shaded or moist places, Pennsylvania to Minnesota and Iowa. Not common. June–July



4. Silene vulgàris (Moench) Garcke. Bladder Campion. (Fig. 1443.)

Cucubalus Behen L. Sp. Pl. 414. 1753. Not *Silene Behen* L.
Behen vulgaris Moench, Meth. 709. 1794.
Silene Cucubalus Wibel, Prim. Werth. 241. 1799.
Silene vulgaris Garcke, Fl. Deutsch. Ed. 9, 64. 1869.
Silene inflata J. E. Smith, Fl. Brit. 2: 292. 1800.

Perennial, branched from the base, glaucous and glabrous, or rarely pubescent, 6′–18′ high. Leaves opposite, ovate-lanceolate or oblong, acute, variable in size, the lower often spatulate; flowers white, 6″–10″ broad, in loose cymose panicles, often drooping; calyx at first tubular-campanulate, at length inflated and globose, 4″–6″ long, strongly veined; petals 2-cleft, with or without a small crown.

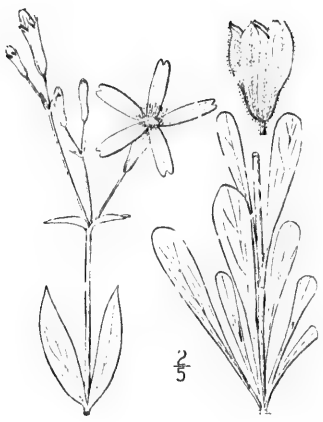
In meadows and waste places, New Brunswick to Ontario, south to New Jersey and Illinois. Locally abundant. Naturalized from Europe and native also of Asia. Summer. Called also Behen, Cow-bell, and Spattling or Frothy Poppy.

5. Silene nùtans L. Nodding Catchfly. (Fig. 1444.)

Silene nutans L. Sp. Pl. 417. 1753.

Perennial, glandular-pubescent above or nearly glabrous, stem slender, erect, 1°–2° tall. Lower and basal leaves spatulate, subacute at the apex, 2′–5′ long, 3″–8″ wide, tapering into slender petioles; stem-leaves few and distant, narrowly oblong or lanceolate, acute or acuminate at the apex, sessile, the uppermost (bracts) very small; flowers 6″–8″ broad, white or pink, nodding or spreading in a loose panicle; pedicels slender, 4″–12″ long; calyx oblong-cylindric in flower, 4″–5″ long, glandular, its teeth triangular, acute; petals 2-cleft or sometimes 4-cleft, the lobes narrowly oblong; capsule ovoid, 5″–6″ high, distending the calyx.

Mt. Desert Island, Maine, and Staten Island, N. Y. Fugitive from Europe. English names, Dover Catchfly, Nottingham Catchfly. June–Sept.



6. Silene Virgínica L. Fire Pink. (Fig. 1445.)

Silene Virginica L. Sp. Pl. 419. 1753.

Perennial, slender, ascending or erect, viscid-pubescent, branching above, 1°–2° high. Leaves thin, those of the base and lower part of the stem spatulate or oblanceolate, 3′–5′ long, obtuse or acute, tapering into a winged petiole; upper leaves oblong-lanceolate, acute, sessile; inflorescence loosely cymose-paniculate; flowers crimson, 1′–1½′ broad; pedicels slender, ½′–2′ long; calyx tubular-campanulate, 9″–12″ long, enlarged by the ripening pod, its teeth ovate, acute, scarious-margined; petals 2-cleft, 2-lobed, or irregularly incised, crowned, the limb oblong or linear-oblong.

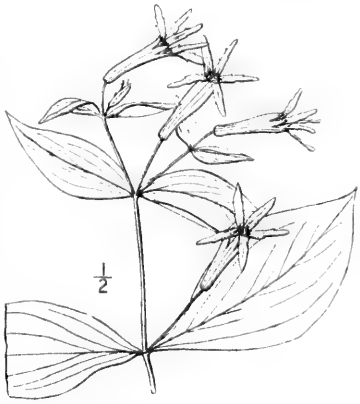
In dry woods, southern New Jersey, western New York and southwestern Ontario to Minnesota, south to Georgia and Missouri. Ascends to 4200 ft. in Virginia. May–Sept.

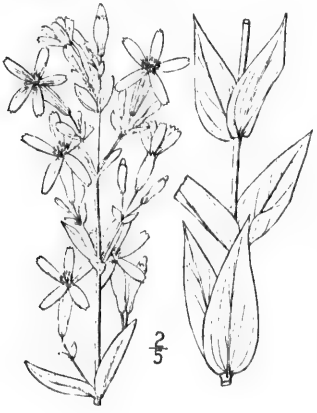
7. Silene rotundifòlia Nutt. Round-leaved Catchfly. (Fig. 1446.)

Silene rotundifolia Nutt. Gen. 1: 288. 1818.

Perennial, stem slender, ascending or reclining, viscid-pubescent, branched, 1½°–2° long. Leaves thin, membranous, the lower and basal ones obovate or broadly spatulate, 2′–4′ long, narrowed into a winged petiole, obtuse but pointed, the cauline obovate, broadly oblong or orbicular-ovate, acute, the uppermost sessile; flowers few and loosely cymose, or solitary, scarlet, 1′–2′ broad; pedicels slender, 1′–2′ long; calyx tubular-campanulate, 10″–15″ long, somewhat enlarged by the ripening pod, its teeth ovate, acute; petals 2-cleft, lobed, or laciniate, crowned.

In shaded places, southern Ohio and Kentucky to Georgia. Summer.





8. Silene règia Sims. Royal Catchfly. (Fig. 1447.)

Silene regia Sims, Bot. Mag. *pl. 1724.* 1814.

Perennial, erect, stout, 3°–4° high, simple or sparingly branched, minutely rough-pubescent, slightly viscid. Leaves all but the lowest sessile, thick, ovate-lanceolate, acute or acuminate, 2′–3′ long; inflorescence a narrow strict panicle of few-flowered cymose clusters; pedicels generally less than ½′ long; flowers numerous, deep scarlet, about 1′ broad; calyx oblong-tubular, 10″ long, slightly enlarged by the ripening pod, its teeth ovate-acute; petals emarginate or laciniate, crowned.

Prairies, Ohio to Alabama, west to Missouri. July.

9. Silene Caroliniàna Walt. Wild Pink. (Fig. 1448.)

Silene Caroliniana Walt. Fl. Car. 142. 1788.
Silene Pennsylvanica Michx. Fl. Bor. Am. 1: 272. 1803.

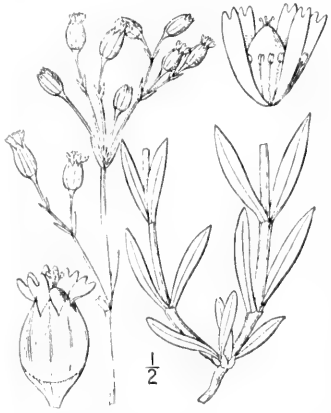
Perennial, tufted, 4′–10′ high, viscid-pubescent, especially above, generally nearly glabrous below. Basal leaves spatulate, or oblanceolate, acute or obtuse, 2′–4′ long, narrowed into a broad petiole, the margins often ciliate; stem-leaves shorter, sessile, oblong or lanceolate; flowers pink, about 1′ broad, in terminal cymes; pedicels 2″–15″ long; calyx narrow, tubular, much enlarged by the ripening pod, its teeth ovate, acute; petals cuneate, emarginate, eroded, crowned at the base of the claw.

In dry, sandy or rocky soil, Maine to Georgia, west to central New York, Pennsylvania and Kentucky. Ascends to 3300 ft. in West Virginia. April–June.

10. Silene antirrhìna L. Sleepy Catchfly. (Fig. 1449.)

Silene antirrhina L. Sp. Pl. 419. 1753.

Annual, slender, erect or ascending, puberulent or glabrous, glutinous about the nodes, simple, or branched above, 8′–2½° high, the branches ascending. Basal and lower leaves spatulate or oblanceolate, 1′–2′ long, narrowed into a petiole, obtuse or acute, sometimes slightly ciliate; upper leaves linear and gradually reduced to subulate bracts; inflorescence a loose cymose panicle; pedicels slender, erect; flowers pink, about 1″–2″ broad; calyx narrowly ovoid, 2″–3″ long, much expanded by the ripening pod, its teeth ovate, acute; petals obcordate, minutely crowned.



In waste places and woods, New England to southern Ontario and British Columbia, south to Florida and Mexico. Flowers opening for a short time in sunshine. Ascends to 3200 ft. in Virginia. Summer.

Silene antirrhina divaricàta Robinson, Proc. Am. Acad. 28: 132. 1893.

More slender than the species and with narrower leaves; branches spreading, filiform; calyx 2″–2½″ long; petals none. Illinois and central New York.

11. Silene Armèria L. Sweet William or Lobel's Catchfly. (Fig. 1450.)

Silene Armeria L. Sp. Pl. Ed. 2, 601. 1762.

Annual, erect, branching, glabrous and glaucous, or minutely puberulent, about 1° high, glutinous below each node. Basal leaves oblanceolate, 2′–3′ long, obtuse; stem-leaves ovate or ovate-lanceolate, 1′–3′ long, acute or obtuse; inflorescence a terminal compact compound cyme; flowers purple or pink, 6″–8″ broad; calyx club-shaped, 5″–8″ long, slightly enlarged by the ripening pod; pedicels about 1″ long; petals emarginate, crowned with narrow scales.

In waste places and spontaneous in gardens, New Brunswick and Ontario to Michigan, south to New Jersey and Pennsylvania. Introduced from Europe. June–July.

12. Silene noctiflòra L. Night-flowering Catchfly. (Fig. 1451.)

Silene noctiflora L. Sp. Pl. 419. 1753.

Annual, stout, viscid-pubescent, simple, or branching, 1°–3° high. Lower and basal leaves obovate or oblanceolate, 2′–5′ long, obtuse, narrowed into a broad petiole; upper leaves sessile, ovate-lanceolate, acute or acuminate, 1′–3′ long; flowers few, pedicelled, white or pinkish, 8″–12″ broad, in a loose dichotomous panicle; calyx 10″–15″ long, tubular, 10-nerved and beautifully veined, much enlarged by the ripening pod, its teeth linear, acute; petals 2-cleft.

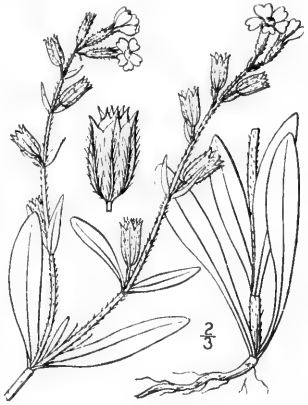
In waste places, Nova Scotia and New Brunswick to Manitoba, south to Florida and Missouri. Adventive from Europe. Flowers opening at dusk and remaining so until the morning of the next day, fragrant. July–Sept.

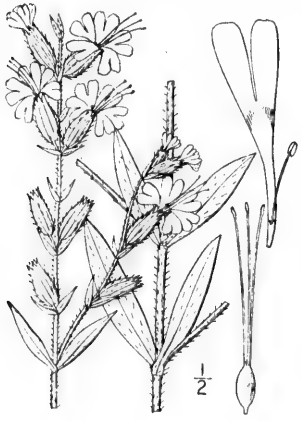
13. Silene Ánglica L. English or Small-flowered Catchfly. (Fig. 1452.)

Silene Anglica L. Sp. Pl. 416. 1753.
Silene Gallica L. Sp. Pl. 417. 1753.

Annual, hirsute-pubescent, stem slender, usually erect, simple or branched, 1°–2° high. Leaves spatulate or oblanceolate, 6″–2′ long, obtuse, sometimes mucronate, narrowed into a margined petiole, or the upper ones narrower and acute; flowers in a terminal simple 1-sided spicate raceme, nearly sessile or the lower ones distant and longer-pedicelled, sometimes all distinctly pedicelled; calyx cylindric or oblong-tubular in flower, 10-nerved, villous, 4″–5″ long, much enlarged by the ripening pod and becoming ovoid with a contracted throat, its teeth lanceolate, spreading; petals toothed, entire or somewhat 2-cleft, white, somewhat longer than the calyx.

In waste places, Maine to Ontario, south to southern New York and Pennsylvania. Adventive from Europe. Extensively naturalized as a weed on the Pacific Coast, and widely distributed in nearly all warm-temperate regions. Has been mistaken for *S. nocturna* L. April–July.





14. Silene dichótoma Ehrh. Forked Catchfly. (Fig. 1453.)

Silene dichotoma Ehrh. Beitr. 7: 143. 1792.

Silene racemosa Otth in DC. Prodr. 1: 384. 1824.

Annual, erect, branching, pubescent, 1°–2° high. Lower and basal leaves lanceolate or oblanceolate, 2′–3′ long, acuminate or acute, tapering into a villous petiole; upper leaves sessile, lanceolate or linear; flowers white, sessile or very short-pedicelled, distant in forking 1-sided spikes; calyx cylindric, 6″–8″ long, hirsute, much enlarged by the ripening pod, its teeth ovate-lanceolate, acute; petals white, bifid, with a short obtuse crown.

In fields and waste places, Maine to New Jersey and Pennsylvania. Also in California. Adventive from southern Europe. Summer.

15. Silene Menziesii Hook. Menzies' Pink. (Fig. 1454.)

Silene Menziesii Hook. Fl. Bor. Am. 1: 90. *pl. 30.* 1830.

Perennial, slender, ascending or decumbent, leafy, widely branching, minutely and densely glandular-pubescent, 6′–18′ high. Leaves sessile, or the lowest narrowed into a petiole, oval, ovate-lanceolate or slightly oblanceolate, acute or acuminate at each end, minutely ciliate on the margins, 1′–2½′ long; flowers axillary and terminal, numerous, slender-peduncled, white (or pink?), 4″–5″ long; petals 2-cleft, crownless, longer than the 5-toothed calyx; capsule about the length of the calyx; seeds black, minutely tuberculate.

In damp soil, western Nebraska to the Northwest Territory, British Columbia, California and New Mexico. June–Aug.

4. LÝCHNIS L. Sp. Pl. 436. 1753.

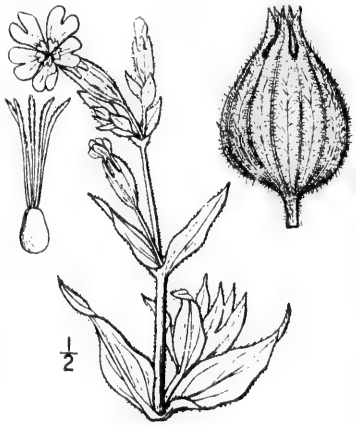
Herbs, mainly erect, with the aspect of *Silene*. Calyx ovoid, tubular, or inflated, 5-toothed, 10-nerved. Petals 5, narrowly clawed, the blade entire, 2-cleft, or laciniate, generally crowned. Stamens 10. Ovary 1-celled or incompletely several-celled at the base, many-ovuled; styles 5, opposite the calyx-teeth (occasionally 4 or rarely even 3). Capsule dehiscent by 10 or fewer apical teeth or valves. [From the Greek for lamp, in allusion to the flame-colored flowers of some species.]

A genus of about 35 species, natives of the north temperate and arctic zones. In addition to the following about 8 others occur in the northern and western parts of North America.

Calyx-teeth not twisted; plants pubescent, glandular or glabrate.
- Flowers cymose or panicled; calyx enlarged by the ripening pod.
  - Fruiting calyx much enlarged, ovoid, obovoid or globose.
    - Plants viscid-pubescent; flowers usually dioecious.
      - Flowers white or pink, opening in the evening. — 1. *L. alba.*
      - Flowers red, opening in the morning. — 2. *L. dioica.*
    - Plant roughish-pubescent; flowers perfect, scarlet. — 3. *L. Chalcedonica.*
  - Fruiting calyx campanulate or tubular.
    - Petals deeply laciniate; introduced species. — 4. *L. Flos-cuculi.*
    - Petals entire or emarginate; native western species. — 5. *L. Drummondi.*
- Flowers solitary; calyx inflated; plants arctic-alpine.
  - Flower nodding; pod erect. — 6. *L. apetala.*
  - Flower and pod erect or nearly so. — 7. *L. affinis.*

Calyx-teeth twisted; plant densely white-woolly all over. — 8. *L. Coronaria.*

1. Lychnis álba Mill. White Campion. Evening Lychnis. (Fig. 1455.)



Lychnis alba Mill. Gard. Dict. Ed. 8, no. 4. 1768.
Lychnis vespertina Sibth. Fl. Oxon. 146. 1794.

Biennial, viscid-pubescent, loosely and freely branching, 1°–2° high. Leaves ovate-oblong or ovate-lanceolate, acute, 1′–3′ long, the lower tapering into a margined petiole, the upper sessile; flowers few, loosely paniculate, 9″–12″ broad, white or pinkish, opening at dusk and remaining open into the morning of the next day, slightly fragrant, often dioecious; calyx at first tubular, 6″–9″ long, about 2″ wide, swelling with the ripening pod so as to become ovoid and 6″–7″ in diameter, its teeth short, lanceolate; petals obovate, 2-cleft, crowned; teeth of the capsule 2-cleft, nearly erect.

In waste places and on ballast, occasional in the maritime provinces of Canada, Ontario and in the Eastern and Middle States. Adventive or naturalized from Europe. Summer.

2. Lychnis diòica L. Red Campion. (Fig. 1456.)

Lychnis dioica L. Sp. Pl. 437. 1753.
Lychnis diurna Sibth. Fl. Oxon. 145. 1794.

Biennial, very viscid-pubescent, branching above, 1°–2° high. Basal leaves long-petioled, oblong, obtuse but pointed, the blade, 2′–3′ long; stem-leaves sessile or the lower short-petioled, ovate, acute, 1′–2′ long, ½′–1½′ wide; flowers numerous in panicled cymes, red or nearly white, scentless, 9″–12″ broad, dioecious, opening in the morning; calyx at first tubular, about 4″ long and 2½″ wide, swollen in fruit to nearly globular by the ripening pod, its teeth ovate-lanceolate, acute; petals obovate, 2-cleft, crowned; teeth of the capsule 2-cleft, recurved.

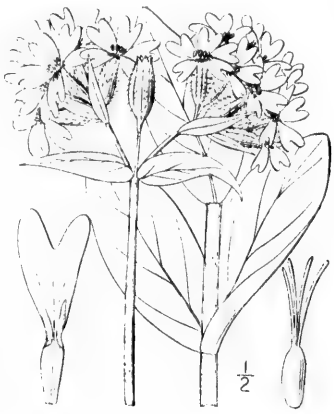
In waste places and ballast, Nova Scotia, Ontario, New England and the Middle States. Not common. Adventive from Europe. Summer. Called also Adder's-flower.

3. Lychnis Chalcedónica L. Scarlet Lychnis. (Fig. 1457.)

Lychnis Chalcedonica L. Sp. Pl. 436. 1753.

Perennial, stem stout, erect, simple or little branched, finely pubescent or hirsute, 1°–2½° tall. Leaves ovate, ovate-lanceolate or the upper lanceolate, acute or acuminate at the apex, rounded or subcordate at the base, sessile or somewhat clasping, dark green, 2′–5′ long, 6″–18″ wide; flowers perfect, numerous, about 1′ broad, scarlet, in one or more usually dense terminal cymes; calyx oblong in flower, becoming obovoid, its teeth triangular, acute; petals 2-cleft or laciniate; capsule borne on a stipe of nearly its own length, its teeth entire.

Escaped from gardens to roadsides, Massachusetts to southern New York. Native of eastern Europe and western Asia. Flowers, in cultivation, often double. Old English names, Scarlet Lightning, and Cross-of-Jerusalem. June–Sept.



4. Lychnis Flós-cùculi L. Cuckoo Flower. Ragged Robin. (Fig. 1458.)

Lychnis Flos-cuculi L. Sp. Pl. 436. 1753.

Perennial, slender, erect, 1°–2° high, freely branching, downy-pubescent below, slightly viscid above. Lower and basal leaves oblanceolate or spatulate, 2′–3′ long, tapering into a broad petiole; upper leaves sessile, lanceolate or linear-lanceolate, distant, the uppermost reduced to lanceolate bracts; inflorescence paniculate; flowers pink, blue or white, 8″–12″ broad; calyx at first cylindric, 3″ long, 10-nerved, becoming campanulate in fruit, its teeth triangular, acute; petals cleft into 4 linear lobes, the middle pair of lobes longer; capsule globose.

In moist waste places, New Brunswick to New Jersey and Pennsylvania. Commonly cultivated. Fugitive from Europe. Called also Crow-flower, Meadow Pink, and Meadow Campion. June–Sept.

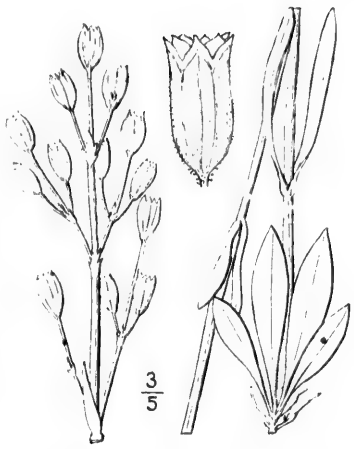
5. Lychnis Drúmmondi (Hook.) S. Wats. Drummond's Pink. (Fig. 1459.)

Silene Drummondi Hook. Fl. Bor. Am. 1: 89. 1830.

Lychnis Drummondi S. Wats. Bot. King's Exp. 37. 1871.

Erect from a perennial root, simple or sparingly branched, finely glandular-pubescent and viscid, 1°–3° high. Leaves oblanceolate or linear, acute, narrowed into a margined petiole or the upper sessile, 1′–3½′ long; flowers few, slender-pedicelled, white or purplish, 6″–10″ long; petals scarcely longer than the tubular calyx, entire or emarginate at the apex, narrower than the auricled claw; capsule oblong-cylindric, 6″–8″ long; seeds tuberculate.

In dry soil, Nebraska to Manitoba, west to California and Oregon. June–July.



6. Lychnis apétala L. Nodding Lychnis. (Fig. 1460.)

Lychnis apetala L. Sp. Pl. 437. 1753.

Tufted, arctic or alpine, perennial, 3′–8′ high, glandular-pubescent at least above. Stems 1-flowered; leaves linear or oblanceolate, ½′–2½′ long, 1″–3″ wide, sessile, or the lower narrowed into a petiole; flower nodding, 6″–8″ long; petals narrow, 2-cleft, included in the calyx; calyx inflated, strongly purple-veined, its teeth triangular-ovate, acute; petals narrow, about 1″ wide, minutely appendaged, equalling or shorter than the calyx, deeply 2-cleft; capsule erect, ovoid, 4″ in diameter.

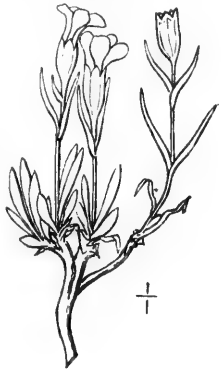
Labrador and throughout arctic America. Also in arctic and alpine Europe and Asia. Summer.

7. Lychnis affinis Vahl. Arctic Lychnis. (Fig. 1461.)

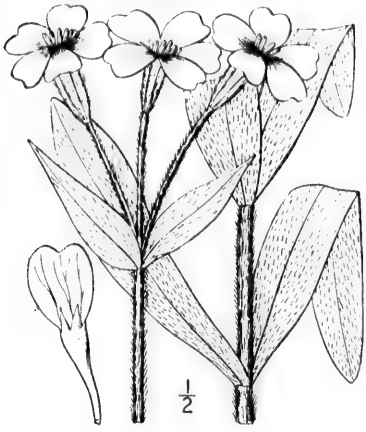
Lychnis affinis Vahl, in Fries, Mant. 3: 36. 1843.

Tufted, arctic, perennial, erect, 2′–4′ high, glandular-pubescent throughout. Basal leaves spatulate, obtuse, about ½′ long, ciliate; stem-leaves linear, ½′–1′ long, obtuse, sessile, or narrowed into a short broad petiole; flower erect, 4″–6″ long; calyx oblong or ovate-campanulate, slightly inflated, its teeth short, acute; petals somewhat exserted, the blade narrowed below, emarginate and eroded, the appendages minute.

Labrador and arctic America and Europe. Summer.



8. Lychnis Coronària (L.) Desr. Mullein Pink. (Fig. 1462.)



Agrostemma Coronaria L. Sp. Pl. 436. 1753.

Lychnis Coronaria Desr. in Lam. Encycl. 3: 643. 1789.

Perennial, densely white-woolly all over; stem stout, erect or ascending, simple or branched, 1°–3° tall. Lower leaves spatulate, 2′–4′ long, 6″–15″ wide, narrowed into margined petioles; upper leaves oblong or lanceolate, sessile, acute or acuminate at the the apex, narrowed or rounded at the base, the uppermost (bracts) usually small; flowers few, 1′ broad or more, long-pedicelled in open terminal panicles; calyx oblong-campanulate, its teeth filiform-subulate, twisted, shorter than the tube; petals crimson.

Escaped from gardens to roadsides and waste places, Massachusetts to southern New York. Native of Europe. Also called Rose Campion. June–Aug.

5. GYPSÓPHILA L. Sp. Pl. 406. 1753.

Annual or perennial, branching or diffuse, mostly glabrous and glaucous herbs, with narrow leaves, and small numerous axillary or paniculate flowers. Calyx turbinate or campanulate, 5-toothed, 5-nerved, bractless. Petals 5, entire or emarginate, their claws narrow. Stamens 10; styles 2. Capsule dehiscent by 4 valves extending to or below the middle. Seeds reniform, laterally attached; embryo coiled. [Greek, in allusion to the supposed preference of some species for gypsum soils].

About 60 species, natives of Europe, Asia and northern Africa.

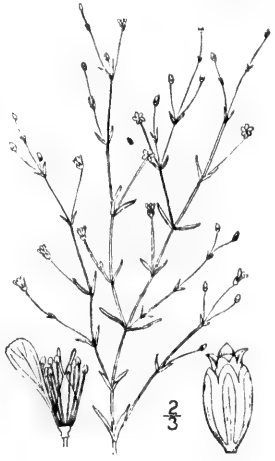
Annual, diffuse, leaves narrowly linear; flowers axillary on filiform peduncles. 1. *G. muralis.*
Erect perennial; leaves lanceolate; flowers paniculate. 2. *G. paniculata.*

1. Gypsophila muràlis L. Low Gypsophyll. (Fig. 1463.)

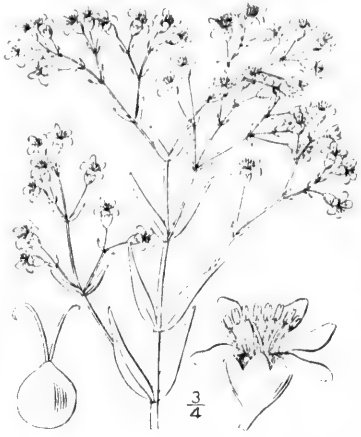
Gypsophila muralis L. Sp. Pl. 408. 1753.

Annual, diffuse, slender, much branched, glabrous or slightly rough at the base, 4′–7′ high. Leaves narrowly linear or subulate, attenuate at each end, 3″–10″ long, ¼″–½″ wide; peduncles slender, spreading or ascending, 3″–10″ long, flowers purplish, 1½″–2″ broad; calyx turbinate, 1½″–2″ long, 5-toothed, the teeth rounded; petals crenate or emarginate, 2″–3″ long, much exceeding the calyx; pod about 2″ long, slightly longer than the calyx.

In waste places, Ontario to Massachusetts, southern New York and New Jersey. Adventive or naturalized from Europe. June–Sept.



2. Gypsophila paniculàta L. Tall Gypsophyll. (Fig. 1464.)



Gypsophila paniculata L. Sp. Pl. 407. 1753.

Perennial, glabrous or sometimes pubescent below, stem slender, erect, much branched, 1°–2° tall. Leaves lanceolate, those of the stem 1′ long or more, 2″–4″ wide, acuminate at the apex, narrowed at the base, those of the branches much smaller, the bracts and bractlets minute; flowers 1½″–2″ broad, very numerous in panicled cymes; pedicels 2″–5″ long; calyx campanulate, 1″ high, deeply 5-lobed, the segments with broad scarious margins; petals white or pink, slightly emarginate, one-fourth to one-half longer than the calyx.

Near Emerson, Manitoba (according to Macoun). Fugitive from northern Europe or Asia. Summer.

6. TÙNICA Adans. Fam. Pl. 2: 255. 1763.

Rigid and slender mainly perennial herbs, with small glomerate panicled or solitary flowers, bracted at the base. Calyx top-shaped or campanulate, 5-toothed, 5–15-nerved. Petals 5, long-clawed, the limb emarginate or bifid. Stamens 10. Styles 2. Capsule ovoid or oblong, dehiscent by 4 apical teeth or valves. Seeds compressed, laterally attached; embryo straight, eccentric. [Latin, a cloak, in allusion to the bracts at the base of the calyx.]

A genus of about 20 species, natives of southern Europe and western Asia.

1. Tunica Saxífraga (L.) Scop. Tunica. Saxifrage Pink. (Fig. 1465.)

Dianthus Saxifraga L. Sp. Pl. 413. 1753.

Tunica Saxifraga Scop. Fl. Carn. Ed. 2, 300. 1772.

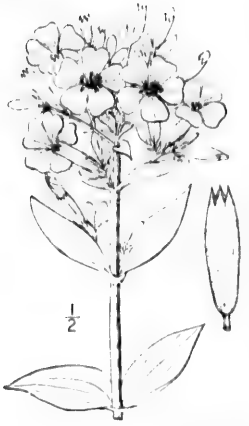
Perennial, tufted, sparsely pubescent or glabrous; stems diffuse or ascending, 4′–8′ long, terete, branching. Leaves linear-subulate, erect, very acute, 3″–5″ long, less than ½″ wide, connate at the base, the lower imbricated, the upper distant, their margins scabrous or ciliate; flowers panicled, about 3″ broad, pink or purple; calyx campanulate, 5-ribbed, 3″ long, twice the length of the scarious-margined acute bracts.

Roadsides, Flushing, Long Island, N. Y., and London, Ontario. Adventive from Europe. Summer.

7. SAPONÀRIA L. Sp. Pl. 408. 1753.

Annual or perennial, erect or diffuse herbs, mostly with broad leaves and large flowers. Calyx ovoid, oblong or tubular, 5-toothed, obscurely nerved. Petals 5, entire or emarginate, long-clawed. Stamens 10. Ovary 1-celled or incompletely 2–4-celled; styles 2. Capsule ovoid or oblong, dehiscent by 4 short apical teeth or valves. [Latin, soap; its juices abound in saponin, and have cleansing qualities.]

About 35 species, natives of Europe, Asia and northern Africa.



1. Saponaria officinàlis L. Soapwort. Bouncing Bet. Hedge Pink. Bruise-wort. (Fig. 1466.)

Saponaria officinalis L. Sp. Pl. 408. 1753.

Perennial, glabrous, erect, stout, sparingly branched, leafy, 1°–2° high. Leaves ovate or oval, 2′–3′ long, about 1′ wide, strongly 3–5-ribbed, acute, narrowed at the base into a broad short petiole; flowers pink or whitish, about 1′ broad, in dense terminal corymbs, with numerous small lanceolate bracts or floral leaves; calyx tubular, 8″–10″ long, faintly nerved, 5-toothed; petals obcordate with a scale at the base of the blade; pod narrowly oblong, shorter than the calyx.

Roadsides and waste places, common in most districts and escaped from gardens, spreading by underground stolons. Naturalized from Europe. Flowers sometimes double. Summer. Called also Fuller's-herb, Old Maid's Pink and Sheepweed.

8. VACCÀRIA Medic. Phil. Bot. 1: 96. 1789.

Annual glabrous and glaucous erect dichotomously branching herbs, with clasping ovate or ovate-lanceolate acute leaves, and rather small red or pink slender-pedicelled flowers in terminal cymes. Calyx cylindric in flower, becoming sharply 5-angled and inflated in fruit, 5-toothed, not bracted at the base. Petals much longer than the calyx, not appendaged. Stamens 10. Styles 2. Capsule 4-toothed. Seeds laterally attached; embryo curved. [Latin, cow, in allusion to its value for fodder.]

About 3 species, natives of Europe and Asia.

1. Vaccaria Vaccària (L.) Britton. Cow-herb. (Fig. 1467.)

Saponaria Vaccaria L. Sp. Pl. 409. 1753.

Vaccaria vulgaris Host, Fl. Aust. 1: 518. 1827.

Branching above, 1°–3° high. Leaves lanceolate or ovate-lanceolate, 1′–3′ long, ½′–1′ wide, acute, connate at the base; flowers pale red, 3″–4″ broad, borne in loose corymbose cymes; calyx oblong or ovate, 5″–7″ long, 5-ribbed, much inflated and wing-angled in fruit; petals crenulate, with no scale at the base of the blade.

In waste places, Ontario to British Columbia, south to Florida and Louisiana. Locally abundant. Also in the Rocky Mountain region. Naturalized or adventive from Europe. June–Aug.

9. DIÁNTHUS L. Sp. Pl. 409. 1753.

Stiff perennial (rarely annual) herbs, mainly with narrow leaves. Flowers terminal, solitary or cymose-paniculate, generally purple. Calyx 5-toothed, finely and equally many-striate, tubular, several-bracted at the base. Petals 5, long-clawed, dentate or crenate. Stamens 10. Styles 2. Ovary 1-celled, stipitate. Capsule cylindric or oblong, stalked, dehiscent by 4 or 5 short teeth at the summit. Seeds compressed, laterally attached. Embryo straight, excentric. [Greek, the flower of Jove.]

Species about 200, natives of the Old World; one of Siberia extending into arctic America.

Annuals; flowers clustered.
- Bracts broad, scarious. — 1. *D. prolifer.*
- Bracts narrow, herbaceous, long-pointed. — 2. *D. Armeria.*

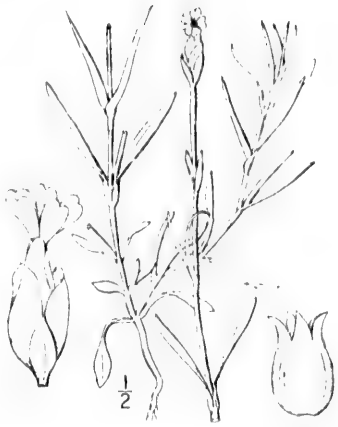
Perennials.
- Flowers solitary; leaves linear, short. — 3. *D. deltoides.*
- Flowers clustered; leaves lanceolate. — 4. *D. barbatus.*

1. Dianthus prólifer L. Proliferous Pink. (Fig. 1468.)

Dianthus prolifer L. Sp. Pl. 410. 1753.

Annual, erect, slender, glabrous, 6′–15′ high, simple, or with few erect branches. Leaves distant, linear, erect, acute, ½″–1″ wide, 9″–15″ long; flowers small, pink, clustered in terminal oblong or obovoid heads, and appearing successively from behind the bracts, which are broad, ovate, scarious, imbricated, shining, obtuse or mucronate, equalling and concealing the calyx.

In waste places and ballast, Staten Island, N. Y., New Jersey and eastern Pennsylvania. Fugitive from Europe. Summer.



2. Dianthus Armèria L. Deptford Pink. (Fig. 1469.)

Dianthus Armeria L. Sp. Pl. 410. 1753.

Annual, erect, stiff, finely pubescent, 6′–18′ high; branches few, nearly erect. Leaves linear, erect, acute or the lower obtusish, 1′–3′ long, 1″–1½″ wide; flowers small, pink with whitish dots, borne in terminal often dense clusters; bracts lanceolate-subulate, long-pointed, erect, mostly longer than the sharply-toothed calyx; capsule sometimes 5-toothed.

In fields and along roadsides, southern Ontario and Maine to Maryland, west to Michigan; rather common in the Eastern and Middle States. Naturalized from Europe. Summer.

3. Dianthus deltoides L. Maiden Pink. (Fig. 1470.)

Dianthus deltoides L. Sp. Pl. 411. 1753.

Perennial, tufted, glabrous or somewhat hoary; stems ascending, 6′–15″ long; branches usually several, nearly erect. Leaves linear-lanceolate, 6″–9″ long, 1″ wide, those of the flowering stems erect, acutish, the lower obtuse and spreading; flowers pink or whitish, solitary at the ends of the stem and branches; petals dentate at the end; bracts ovate, pointed, about half as long as the calyx or less.

In waste places, eastern Massachusetts to northern New York and Michigan. Adventive from Europe. Native also of western Asia. Summer.

4. Dianthus barbàtus L. Sweet William. Bunch Pink. (Fig. 1471.)

Dianthus barbatus L. Sp. Pl. 409. 1753.

Perennial, tufted, glabrous, stems erect, 1°–2° high, branching above. Leaves lanceolate or ovate-lanceolate, 1½′–3′ long, 4″–9″ wide, acute; bracts linear-filiform, about equalling the long-toothed calyx; flowers pink or whitish, in large terminal clusters.

In waste places, escaping from gardens, occasional in the Eastern and Middle States. Introduced from Europe. Summer.

10. ALSÌNE L. Sp. Pl. 274. 1753.

[STELLARIA L. Sp. Pl. 421. 1753.]

Tufted annual generally diffuse herbs, with cymose white flowers. Sepals 5, rarely 4. Petals of the same number, 2-cleft, 2-parted, or emarginate, white in our species, rarely none. Stamens 10 or fewer, hypogynous. Ovary 1-celled, several or many-ovuled; styles commonly 3, rarely 4–5, usually opposite the sepals. Capsule globose, ovoid or oblong, dehiscent by twice as many valves as there are styles. Seeds smooth or roughened, globose or compressed. [Greek, grove, the habitat of some species.]

Species about 75, widely distributed, most abundant in temperate or cold climates.

Styles 5; leaves ovate, 1′–2′ long. 1. *A. aquatica.*
Styles 3, rarely 4.
  Leaves broad, ovate, ovate-oblong or oblong.
    Plants glabrous, or with a few scattered hairs.
      Flowers few, terminal; leaves ovate, 2″–3″ long. 2. *A. humifusa.*
      Cymes lateral; leaves oblong, 5″–10″ long. 3. *A. uliginosa.*
    Stems with 1 or 2 pubescent lines; petioles often ciliate.
      Petals shorter than the calyx; lower leaves petioled. 4. *A. media.*
      Petals longer than the calyx; lower leaves rarely petioled. 5. *A. pubera.*
  Leaves narrow, linear, oblong, oblanceolate or spatulate.
    Flowers 7″–10″ broad. 6. *A. Holostea.*
    Flowers only 2″–6″ broad.
      Bracts of the cyme small, scarious.
        Pedicels widely spreading; cyme diffuse.
          Leaves linear, acute at each end; seeds smooth. 7. *A. longifolia.*
          Leaves lanceolate, broadest below; seeds rough. 8. *A. graminea.*
        Pedicels erect; flowers few or solitary. 9. *A. longipes.*
      Bracts of the cyme foliaceous, resembling the upper leaves.
        Capsule 1½–2 times as long as the calyx; leaves lanceolate or oblong-lanceolate.
          Seeds rough; petals equalling or longer than the calyx. 10. *A. crassifolia.*
          Seeds smooth; petals much shorter than the calyx or none. 11. *A. borealis.*
        Capsule not longer than the calyx; leaves linear or linear-spatulate; petals none. 12. *A. fontinalis.*

1. Alsine aquática (L.) Britton. Water Mouse-ear Chickweed. (Fig. 1472.)

Cerastium aquaticum L. Sp. Pl. 439. 1753.
Stellaria aquatica Scop. Fl. Carn. Ed. 2, 1: 319. 1772.
Alsine aquatica Britton, Mem. Torr. Club, 5: 356. 1894.

Perennial, stem angled, mostly glandular-pubescent above, nearly glabrous below, ascending or decumbent, branched, 1°–2½° long. Leaves ovate or ovate-lanceolate, acute at the apex, the upper sessile and subcordate, the lower petioled, rounded at the base, 1′–2′ long; flowers about ½′ broad, solitary in the forks of the stem and in terminal cymes; pedicels slender, glandular, deflexed and much longer than the calyx in fruit; calyx campanulate; sepals ovate, acute, about one-half as long as the 2-cleft petals; stamens 10; styles 5, alternate with the sepals; capsule ovoid-oblong, slightly longer than the calyx; seeds rough.

In wet and waste places, Ontario to Pennsylvania. Also in British Columbia. Adventive from Europe. May–Aug.

2. Alsine humifûsa (Rottb.) Britton. Low Chickweed. (Fig. 1473.)

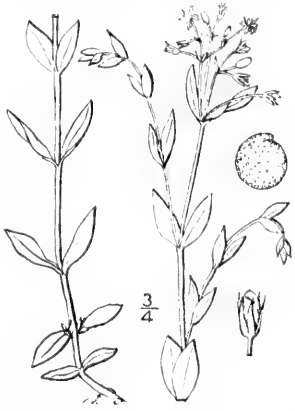
Stellaria humifusa Rottb. Skrift. Vid. Selsk. 10: 447. 1770.

Arenaria thymifolia Pursh, Fl. Am. Sept. 317. 1814.

Alsine humifusa Britton, Mem. Torr. Club, 5: 150. 1894.

Glabrous, stems branching, spreading and ascending, 1′–3′ long, purplish. Leaves ovate or oblong, fleshy, 2″–3″ long, acutish or obtuse, sessile; bracts foliaceous; flowers few or solitary, terminal or axillary, 3″–5″ broad; sepals ovate-lanceolate, acute or acutish, 2″ long; petals 2-parted, equalling or somewhat exceeding the calyx; capsule ovoid, as long as the sepals; seeds smooth, brown.

In moist or wet places, Labrador to New Brunswick and Maine, west to Alaska. Also in northern Europe and Asia. Summer.



3. Alsine uliginòsa (Murr.) Britton. Bog Starwort. Marsh Chickweed. (Fig. 1474.)

Stellaria uliginosa Murr. Prodr. Goett. 55. 1770.

Alsine uliginosa Britton, Mem. Torr. Club, 5: 150. 1894.

Weak, decumbent or ascending, slender, generally growing in dense masses, stems nearly simple, 6′–16′ long. Leaves oblong, 8″–12″ long, 2″–5″ wide, narrowed at the base, the lower slightly petioled and sometimes ciliate, the upper sessile; flowers 3″ broad, in lateral sessile cymes, rarely terminal; pedicels slender; sepals 1″–1½″ long, lanceolate, acute; petals 2-parted, about the length of the calyx and the ovoid pod; seeds rough.

In cold brooks and springs, Maryland, eastern Pennsylvania and western New Jersey, north to New Brunswick. Also in British Columbia and the Northwest Territory, Europe and Asia. Called also Bog or Marsh Stitchwort. Summer.

4. Alsine mèdia L. Common Chickweed. (Fig. 1475.)

Alsine media L. Sp. Pl. 272. 1753.
Stellaria media Cyr. Char. Comm. 36. 1784.

Annual, weak, tufted, much branched, decumbent or ascending, 4′–16′ long, glabrous except a line of hairs along the stem and branches, the pubescent sepals and the sometimes ciliate petioles. Leaves ovate or oval, 2″–1½′ long, acute or rarely obtuse, the lower petioled and often cordate, the upper sessile; flowers 2″–4″ broad, in terminal leafy cymes or also solitary in the axils; pedicels slender; sepals oblong, mostly acute, longer than the 2-parted petals; stamens 2–10; capsule ovoid, longer than the calyx; seeds rough.

In waste places, meadows and woods, common throughout North America. Naturalized from Europe, though possibly native northward. Native also of Asia and now almost universally distributed as a weed. Jan.–Dec.

5. Alsine pùbera (Michx.) Britton. Great Chickweed. (Fig. 1476.)

Stellaria pubera Michx. Fl. Bor. Am. 1: 273. 1803.
Alsine pubera Britton, Mem. Torr. Club, 5: 150. 1894.

Perennial, erect or decumbent, 4′–12′ high, branching, the stems and branches with two finely hairy lines. Leaves oblong or ovate-oblong, ½′–2½′ long, acute or obtuse, their margins more or less ciliate, the upper generally sessile, the lower sometimes narrowed at the base or on broad petioles, those of sterile shoots sometimes all petioled; flowers 4″–6″ broad, in terminal leafy cymes; pedicels rather stout, more or less pubescent; sepals lanceolate, blunt or acute, often scarious-margined, shorter than the 2-cleft or 2-parted petals; capsule subglobose, or ovoid, its teeth revolute after splitting; seeds rough.

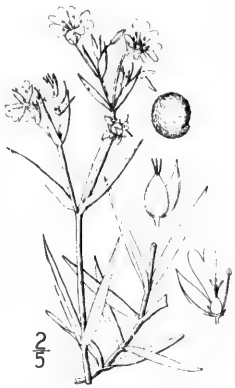
In moist, rocky places, New Jersey and Pennsylvania to Indiana, south to Kentucky, Georgia and Alabama. Ascends to 4500 ft. in North Carolina. May–June.

6. Alsine Holóstea (L.) Britton. Greater Stitchwort or Starwort. Adder's Meat. (Fig. 1477.)

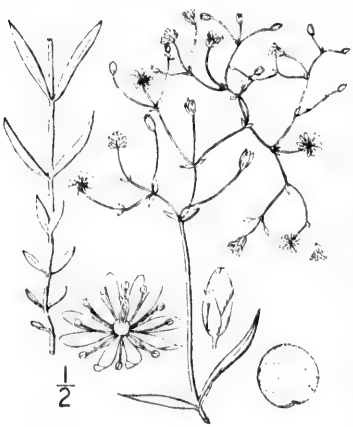
Stellaria Holostea L. Sp. Pl. 422. 1753.
Alsine Holostea Britton, Mem. Torr. Club, 5: 150. 1894.

Erect from a creeping rootstock, glabrous or slightly downy, perennial, 8′–2° high, simple or sparingly branched. Leaves sessile, lanceolate, 1′–3′ long, 2″–3″ wide at the base, tapering to a long slender tip; flowers showy, 7″–10″ broad, in terminal leafy cymose panicles; pedicels rather slender, downy; sepals 3″–6″ long, lanceolate, acute, scarious-margined, one-half to two-thirds the length of the 2-cleft petals; capsule globose-ovoid. Stem angled, rough on the angles.

Along Train's Meadow Road, Long Island, N. Y. (Ruger, 1872). Fugitive or adventive from Europe. Native also of northern Asia. Also called Allbone, from its brittle nodes. April–June.



7. Alsine longifòlia (Muhl.) Britton. Long-leaved Stitchwort. (Fig. 1478.)



Stellaria longifolia Muhl.; Willd. Enum. Hort. Ber. 479. 1809.
Stellaria graminea Bigel. Fl. Bost. 110. 1814. Not L. 1753.
Stellaria Friesiana Ser. in DC. Prodr. 1: 400. 1824.
Alsine longifolia Britton, Mem. Torr. Club, 5: 150. 1894.

Weak, glabrous, or the stem rough-angled, freely branching, erect or ascending, 8′–18′ high. Leaves linear, spreading, acute or acutish at each end, ½′–2½′ long, 1″–3″ wide, the lower smaller; bracts lanceolate, 1″–1½″ long, scarious; pedicels slender, divaricate; cymes at length ample, terminal or lateral; flowers numerous, 3″–5″ broad; sepals lanceolate, acute, about 1½″ long, 3-nerved, equalling or somewhat shorter than the 2-parted petals; capsule ovoid-oblong, nearly twice as long as the calyx; seeds smooth, shining.

In low meadows and swamps, Nova Scotia to Alaska, south to Kentucky and Louisiana, and in the Rocky Mountain region, British Columbia, northern Europe and Asia. May–July.

8. Alsine graminea (L.) Britton. Lesser Stitchwort. Lesser Starwort. (Fig. 1479.)

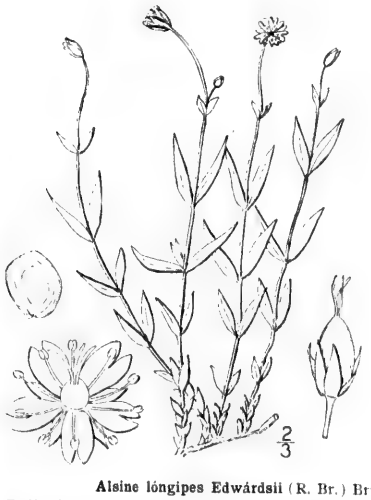
Stellaria graminea L. Sp. Pl. 422. 1753.

Alsine graminea Britton, Mem. Torr. Club. **5**: 150. 1894.

Weak, glabrous, ascending from creeping rootstocks, branching above, 1°–1½° high or long, stem 4-angled. Leaves sessile, lanceolate or oblong-lanceolate, spreading or ascending, 10″–15″ long, 2″–3″ wide, broadest just above the base, acute, the lower smaller; cymes diffuse, terminal, or at length lateral; pedicels slender, spreading; bracts scarious, often ciliate, lanceolate, 2″–3″ long; flowers 3″–5″ broad; sepals lanceolate, acute, 2″–2½″ long, 3-nerved; petals 2-cleft, about the length of the sepals; capsule oblong, exceeding the sepals; seeds finely roughened.

In fields and along roadsides, Nova Scotia, Quebec, Ontario, New England and the Middle States; frequent. Considered by Prof. Macoun as native in Canada; in southern New York and New Jersey it is certainly introduced and adventive from Europe. Native of Europe and northern Asia. May–July.

9. Alsine lóngipes (Goldie) Coville. Long-stalked Stitchwort. (Fig. 1480.)



Stellaria longipes Goldie, Edinb. Phil. Journ. **6**: 327. 1822.

Alsine longipes Coville, Contr. Nat. Herb. **4**: 70. 1893.

Erect or ascending, tufted, simple or rarely sparingly branched, 3′–12′ high, glabrous, shining, rarely glaucous or pubescent. Leaves lanceolate or linear-lanceolate, 5″–18″ long, 1″–3″ wide at the base, rigid, ascending or erect; flowers few, 3″–5″ broad, terminal, on long slender erect pedicels; bracts scarious, lanceolate; sepals ovate or lanceolate, acute or acutish; petals 2-cleft, exceeding the calyx; capsule ovoid, longer than the sepals; seeds smooth.

In moist places, Labrador and Nova Scotia to northern New England, west to Alaska and Minnesota, south in the Rocky Mountains to Colorado, and in California. Also in northern Asia. Summer.

Alsine lóngipes Edwárdsii (R. Br.) Britton, Mem. Torr. Club, **5**: 150. 1894.

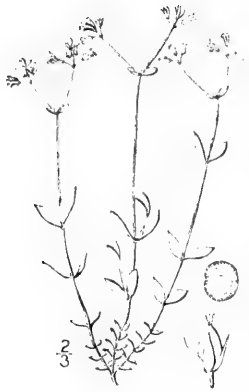
Stellaria Edwardsii R. Br. in Parry's Voy. App. cclxxi. 1824.
Stellaria longipes var. *Edwardsii* S. Wats. Bibl. Index, **1**: 113. 1878.

Leaves lanceolate or ovate-lanceolate, sparingly ciliate at the base; stems 2–3-flowered, 2′–3′ tall. Labrador and Quebec, through arctic America to Siberia.

Alsine lóngipes pedunculàris (Bunge) Britton. Mem. Torr. Club, **5**: 150. 1894.

Stellaria peduncularis Bunge; Ledeb. Fl. Alt. **2**: 157. 1830.
Stellaria longipes var. *peduncularis* Fenzl, in Ledeb. Fl. Ross. **1**: 387. 1842.

Stem 2′–6′ high, bearing 1–3 larger flowers on longer pedicels; stem more or less pubescent, especially at the nodes. Labrador to Alaska and Siberia.



10. Alsine crassifòlia Ehrh. Fleshy Stitchwort. (Fig. 1481.)

Stellaria crassifolia Ehrh. Hannov. Mag. 8: 116. 1784.
Alsine crassifolia Britton, Mem. Torr. Club, 5: 150. 1894.

Diffuse or ascending, weak, slender, simple or branched, glabrous, 2′–10′ long. Leaves somewhat fleshy, oblong-lanceolate to linear-oblong, acute or obtuse, narrowed at the base, 3″–8″ long, 1″–2½″ wide; cymes terminal, few-flowered, or flowers axillary and solitary; bracts foliaceous, small; peduncles slender, ascending, flowers 2″–3″ broad; sepals lanceolate-oblong, acute; petals longer than the calyx; capsule ovoid, longer than the sepals; seeds rough.

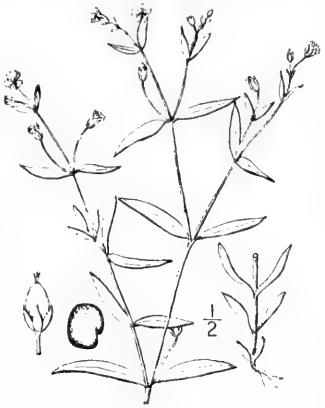
In springs and moist places, Illinois, Minnesota, Quebec, Labrador, Manitoba and in arctic America, south in the Rocky Mountains to Wyoming. Also in northern Europe and Asia. Summer.

11. Alsine boreàlis (Bigel.) Britton. Northern Stitchwort. (Fig. 1482.)

Stellaria borealis Bigel. Fl. Bost. Ed. 2, 182. 1824.
Alsine borealis Britton, Mem. Torr. Club, 5: 150. 1894.

Erect or ascending, weak, much branched, glabrous, or pubescent above, 6′–18′ long. Leaves membranous, lanceolate or oblong-lanceolate, ½′–1½′ long, 2″–5″ wide, acute, sessile, their margins ciliate or naked; inflorescence a leafy terminal compound cyme; pedicels slender, ascending or spreading; flowers 2″–4″ broad; sepals ovate-lanceolate, acute; petals 2–5, shorter than the sepals, or none; capsule oblong, much exceeding the sepals; seeds smooth.

In wet places, Rhode Island to northern New Jersey, Minnesota and British Columbia, south in the Rocky Mountains to Colorado. Also in northern Europe and Asia. Ascends to 5000 ft. in New Hampshire. Summer.

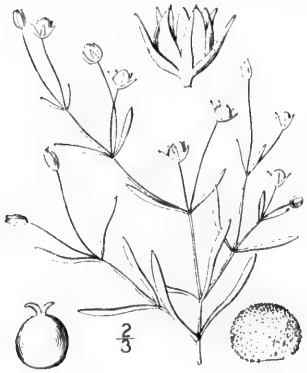


Alsine boreàlis alpéstris (Fries) Britton, Mem. Torr. Club, 5: 150. 1894.

Stellaria alpestris Fries, Mant. 3: 194. 1843.
Stellaria borealis var. *alpestris* A. Gray, Man. Ed. 5, 93. 1867.

Larger, leaves broader, cyme more diffuse; upper bracts scarious or scarious-margined; seeds obscurely roughened. Lake Superior, the Saskatchewan region, British Columbia and the Rocky Mountains. Also in northern Asia.

12. Alsine fontinàlis (Short & Peter) Britton. Water Stitchwort. (Fig. 1483.)



Sagina fontinalis Short & Peter, Transylv. Journ. Med. 7: 600. 1834.
Stellaria fontinalis Robinson, Proc. Am. Acad. 29: 286. 1894.
Alsine fontinalis Britton, Mem. Torr. Club, 5: 356. 1894.

Annual, glabrous, stems weak, very slender, branched, ascending or diffuse, 4′–12′ long. Leaves linear-spatulate, 4″–12″ long, about 1″ wide, the upper sessile, acute or subacute at the apex, the lower obtuse and narrowed into short petioles; pedicels filiform, 3″–15″ long, erect or ascending, solitary or 2–3 together in the forks of the stem and branches and axils; calyx oblong-campanulate, 1″ long; sepals 4 or 5, oblong or linear, obtuse, about equalling the ovoid-oblong obtuse capsule; stamens 4–8; petals wanting; styles very short; seeds densely tuberculate-roughened.

In wet places, Kentucky and Tennessee. April–May.

11. CERÁSTIUM L. Sp. Pl. 437. 1753.

Annual or perennial, generally pubescent or hirsute herbs, with terminal dichotomous cymes of white flowers. Sepals 5, rarely 4. Petals of the same number, emarginate or bifid (rarely wanting). Stamens 10, rarely fewer. Styles equal in number to the sepals and opposite them, or in some species fewer. Capsule cylindric, 1-celled, many-ovuled, often curved, dehiscent by 10, rarely 8, apical teeth. Seeds rough, more or less flattened, attached by their edges. [Greek, horny, referring to the horn-like capsule of many species.]

About 50 species, of wide geographic distribution, most abundant in the temperate zones.

Petals equalling the sepals, or shorter.
- Pedicels not longer than the sepals; flowers glomerate. — 1. *C. viscosum.*
- Pedicels at length longer than the sepals; flowers cymose.
  - Leaves 2″–4″ long; capsule nearly straight. — 2. *C. semidecandrum.*
  - Leaves 4″–12″ long; capsule curved upward. — 3. *C. vulgatum.*

Petals manifestly longer than the sepals (rarely wanting).
- Annuals, viscid-pubescent; flowers 2″–3″ broad.
  - Pedicels much longer than the calyx. — 4. *C. longipedunculatum.*
  - Pedicels shorter than or but little exceeding the calyx. — 5. *C. brachypodum.*
- Perennials, glabrous or pubescent; flowers 6″–10″ broad.
  - Styles always 5.
    - Leaves linear or lanceolate-oblong, mainly acute. — 6. *C. arvense.*
    - Leaves oblong-ovate, obtuse. — 7. *C. alpinum.*
  - Styles 3 (very rarely 4 or 5); leaves linear-oblong. — 8. *C. cerastioides.*

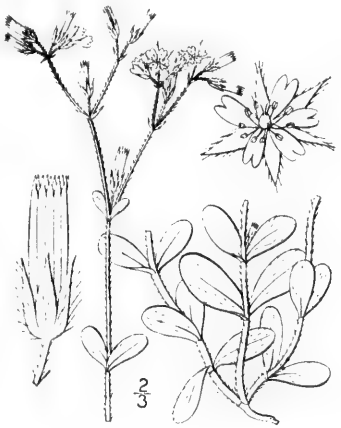
1. Cerastium viscòsum L. Mouse-ear Chickweed. (Fig. 1484.)

Cerastium viscosum L. Sp. Pl. 437. 1753.

Cerastium glomeratum Thuill. Fl. Paris, Ed. 2, 226. 1824.

Annual, tufted, stems ascending or spreading, densely viscid-pubescent, 4′–12′ long. Leaves ovate or obovate, or the lower spatulate, 4″–12″ long, 3″–7″ wide, obtuse; bracts small, herbaceous; flowers about 2″–3″ broad, in glomerate cymes, becoming paniculate in fruit; pedicels shorter than or equalling the acute sepals; petals shorter than the calyx, 2-cleft.

In waste places and meadows, New Brunswick and Ontario, south to Florida and Mexico. Naturalized from Europe, but not very common. Naturalized also in the West Indies, Central America, and on the Pacific Coast. April-July.



2. Cerastium semidecándrum L. Small or Five-stamened Mouse-ear Chickweed. (Fig. 1485.)

Cerastium semidecandrum L. Sp. Pl. 438. 1753.

Cerastium vulgatum var. *semidecandrum* A. Gray, Man. Ed. 5. 94. 1867.

Low, tufted, erect or decumbent, annual, 2′–6′ high, finely viscid-pubescent. Leaves ovate, or the lower spatulate, 2″–4″ long, obtuse; bracts scarious, membranous; inflorescence cymose; pedicels at length longer than the calyx; flowers 1″–1½″ broad; sepals lanceolate, acute, scarious-margined, slightly exceeding the emarginate petals; capsule narrow, nearly straight; stamens often 5.

In dry, sterile soil, New Jersey to Virginia. Naturalized from Europe. Called also Spring Mouse-ear. April-May.

3. Cerastium vulgàtum L. Larger Mouse-ear Chickweed. (Fig. 1486.)

Cerastium vulgatum L. Sp. Pl. Ed. 2, 627. 1762.
Cerastium triviale Link, Enum. Hort. Ber. 1: 433. 1821.
Cerastium viscosum of Linnaeus Herb. and of many recent authors.

Biennial or perennial, viscid-pubescent, tufted, erect or ascending, 6′–18′ long. Lower and basal leaves spatulate-oblong, obtuse; upper leaves oblong, 6″–12″ long, 3″–5″ wide, acute or obtuse; bracts scarious-margined; inflorescence cymose, loose, the pedicels at length much longer than the calyx; sepals obtuse or acute, about equalling the 2-cleft petals, 2″–3″ long; capsule curved upward.

In fields and woods, common throughout our area and probably indigenous high northward, though certainly in large part naturalized from Europe. Often a troublesome weed. Occurs also in the Southern and Western States, and is native in northern Asia. May–Sept.

4. Cerastium longipedunculàtum Muhl. Nodding Chickweed. Powder-horn. (Fig. 1487.)

C. longipedunculatum Muhl. Cat. 46. 1813.
Cerastium nutans Raf. Prec. Decouv. 36. 1814.

Annual, bright green, stem weak, reclining or ascending, diffusely branched, 6′–24′ long, striate, finely clammy-pubescent to glabrate. Lower and basal leaves spatulate, obtuse, petioled, ½′–1′ long, those of the middle part of the stem lanceolate or oblong, 1′–2′ long, 3″–4″ wide, the upper similar, acute, sessile, gradually smaller; inflorescence loosely cymose; pedicels slender, in fruit several times the length of the calyx; flowers 2″–3″ broad; sepals lanceolate, obtuse or acutish, about one-half the length of the 2-cleft petals; pods nodding, 5″–9″ long, curved upward, much exceeding the calyx.

In moist, shaded places, Nova Scotia and Hudson Bay to North Carolina, west to British Columbia, Nevada and northern Mexico. The plant sometimes produces capsules from apparently apetalous flowers. Ascends to 2200 ft. in Pennsylvania. April–June.

5. Cerastium brachýpodum (Engelm.) Robinson. Short-stalked Chickweed. (Fig. 1488.)

Cerastium nutans var. *brachypodum* Engelm.; A. Gray, Man. Ed. 5, 94. 1867.
Cerastium brachypodum Robinson; Britton, Mem. Torr. Club, 5: 150. 1894.

Annual, light green, viscid-pubescent or puberulent all over, stems simple or sparingly branched, tufted, erect, 3′–10′ tall. Lower and basal leaves oblanceolate or spatulate, obtuse or subacute at the apex, 3″–12″ long, narrowed into short petioles, the upper linear or linear-oblong, acute, sessile, sometimes erect-appressed; cymes terminal, few–several-flowered; flowers about 2″ broad; fruiting pedicels, or some of them, deflexed, not more than twice as long as the calyx; capsules straight or slightly curved upward, 2–3 times as long as the calyx.

In dry soil, southwestern Illinois and Missouri to Nebraska, South Dakota and Colorado, south to Texas, Arizona and Mexico. March–July.

Cerastium brachýpodum compáctum Robinson, Proc. Am. Acad. **29**: 278. 1894.
Cyme capitate; capsules very slender. Nebraska to Texas.

6. Cerastium arvénse L. Field Chickweed. (Fig. 1489.)

Cerastium arvense L. Sp. Pl. 438. 1753.

Perennial, densely tufted, erect or ascending, pubescent or nearly glabrous, flowering stems simple or sparingly branched, 4′–10′ high. Basal leaves and those of the sterile shoots linear-oblong, close, slightly narrowed at the base; stem-leaves distant, linear or narrowly lanceolate, 5″–15″ long, 1″–2″ wide, acute; flowers several, cymose, 6″–8″ broad; pedicels slender, erect; petals obcordate, much exceeding the lanceolate acute sepals which equal or are a little shorter than the slightly oblique pod.

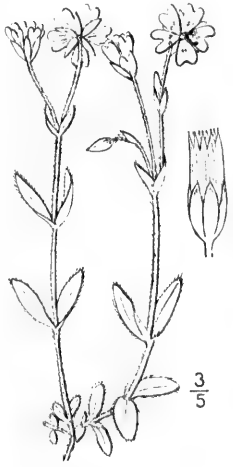
In dry, rocky places, Labrador to Alaska, south to Georgia, Missouri, Nevada and California. Also in Europe and Asia. April–July.

Cerastium arvénse oblongifòlium (Torr.) Holl. & Britt. Bull. Torr. Club, **14**: 47. 1887.
Cerastium oblongifolium Torr. Fl. U. S. 460. 1824.

Larger, pubescent, leaves oblong or lanceolate, broader, mainly obtuse; capsules about twice the length of the calyx. Mainly on magnesian rocks, southern New York to Virginia, west to southern Ontario, Minnesota and in the Rocky Mountains and Sierra Nevada.

Cerastium arvénse velutìnum (Raf.) Britton, Mem. Torr. Club, **5**: 150. 1894.
Cerastium velutinum Raf. Med. Rep. (II.) **5**: 359. 1808.
Cerastium arvense var. *villosum* Holl. & Britt. Bull. Torr. Club, **14**: 49. 1887.

Depressed, villous-pubescent, stem-leaves lanceolate or ovate-lanceolate; capsule 2 or 2½ times the length of the calyx. On serpentine rocks, Lancaster and Chester counties, Pa.



7. Cerastium alpinum L. Alpine Chickweed. (Fig. 1490.)

Cerastium alpinum L. Sp. Pl. 438. 1753.

Perennial, generally silky-hairy, sterile stems prostrate, flowering stems erect, 2′–6′ high. Lower leaves somewhat oblanceolate or spatulate, dense, 2″–4″ long, obtuse; upper leaves distant, ovate-oblong, obtusish, 4″–8″ long; flowers solitary or 2–3, 6″–9″ broad; pedicels slender; petals 2-lobed, twice the length of the lanceolate acute scarious-tipped sepals; pod longer than the calyx, nearly straight.

In moist, rocky places, Gaspé, Quebec; Labrador and in arctic America. Also in arctic and alpine Europe and Asia. Summer.

Cerastium alpinum Fischerianum (Ser.) T. & G. Fl. N. A. **1**: 188. 1838.
Cerastium Fischerianum Ser. in DC. Prodr. **1**: 419. 1824.

Taller; pubescence more rigid. Labrador and through arctic America to Siberia.

8. Cerastium cerastioides (L.) Britton. Starwort Chickweed. (Fig. 1491.)

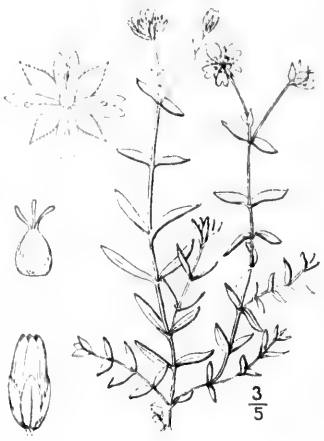
Stellaria cerastioides L. Sp. Pl. 422. 1753.

Cerastium trigynum Vill. Hist. Pl. Dauph. 3: 645. 1789.

Cerastium cerastioides Britton, Mem. Torr. Club, 5: 150. 1894.

Perennial, glabrous except a line of minute hairs along one side of the stem and branches, rarely pubescent throughout. Flowering branches ascending, 3′–6′ long; leaves linear-oblong, 4″–8″ long, about 1″ wide, obtuse, the lower often smaller and slightly narrowed at the base; flowers solitary or few, 5″–6″ broad, long-pedicelled; petals 2-lobed, twice the length of the obtuse or acutish scarious-margined sepals; capsule nearly straight, twice the length of the calyx; styles 3, rarely 4 or 5; sepals and petals 5 or 4.

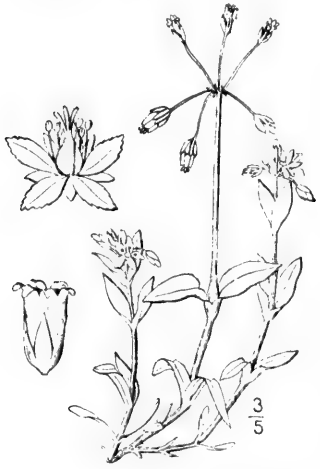
Gaspé, Quebec, and in arctic America. Also in arctic and alpine Europe and Asia. Summer.



12. HOLÓSTEUM L. Sp. Pl. 88. 1753.

Annual erect herbs, often viscid-pubescent above, with cymose-umbellate, white flowers on long terminal peduncles. Sepals 5. Petals 5, emarginate or eroded. Stamens 3–5, hypogynous. Styles 3. Ovary 1-celled, many-ovuled. Capsule ovoid-cylindrical, dehiscent by 6 short valves or teeth. Seeds compressed, attached by the inner face, rough. [Greek, signifying *all bone*, an antiphrase, the herbs being tender.]

About 3 species, natives of Europe and temperate Asia.



1. Holosteum umbellàtum L. Jagged Chickweed. (Fig. 1492.)

Holosteum umbellatum L. Sp. Pl. 88. 1753.

Glabrous or slightly downy below, viscid and glandular-pubescent above, simple, tufted, 5′–12′ high. Basal leaves spreading, oblanceolate or oblong; stem-leaves oblong, acute or obtuse, sessile, ½′–1′ long; umbel terminal, 3–8-flowered; pedicels very slender, about 1′ long, erect or ascending in flower, subsequently reflexed and again erect when the fruit is mature; flowers white, 2″–3″ broad; sepals obtuse, about 2″ long, scarious-margined, somewhat shorter than the eroded petals; capsule ovoid, nearly twice the length of the sepals, its teeth recurved.

Very abundant in the vicinity of Lancaster, Pa.; Delaware. Naturalized from Europe. Native also of northern Asia. April–May.

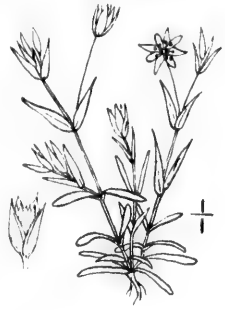
13. MOÈNCHIA Ehrh. Beitr. 2: 177. 1788.

Low annual glabrous herbs, with small narrow sessile leaves. Flowers rather large, terminal, solitary or cymose, 4-parted or sometimes 5-parted, white. Sepals scarious-margined, lanceolate. Petals entire. Stamens 4–10. Styles as many as the sepals and opposite them. Capsule cylindric, equalling or shorter than the calyx, 8-toothed or rarely 10-toothed, the teeth somewhat revolute at maturity. [In honor of Konrad Moench, Professor in Marburg.]

Two or three species, natives of the Mediterranean region.

1. **Moenchia erécta** (L.) Gaertn. Upright Pearlwort. (Fig. 1493.)

Sagina erecta L. Sp. Pl. 128. 1753.
Moenchia erecta Gaertn. Fl. Wett. 1: 219. 1799.
Cerastium quaternellum Fenzl, Verbr. Alsin. tabel p. 18. 1833.



Glabrous and glaucous, tufted, erect or ascending, 2′–6′ high. Basal leaves spatulate and narrowed into a short petiole; stem-leaves sessile, linear or linear-lanceolate, 4″–8″ long, about 1″ wide; flowers few or solitary, erect, 2″–4″ broad, on slender erect pedicels; sepals 4, lanceolate, acute, 2″–3″ long, scarious-margined; petals 4, slightly shorter than the sepals, entire; stamens 4, rarely 8; styles 4; capsule ovoid, dehiscent by 8 short apical teeth.

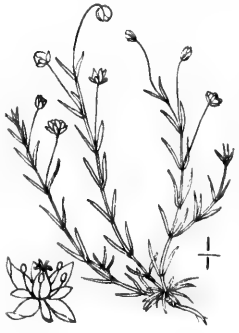
In waste grounds, near Philadelphia (Drummond) and Baltimore. Fugitive or adventive from Europe. Not recently collected. May–July.

14. SAGINA L. Sp. Pl. 128. 1753.

Tufted matted low annual or perennial herbs, with subulate leaves, and small pedicelled whitish flowers. Sepals 4 or 5. Petals of the same number, entire, emarginate or none. Stamens of the same number, or fewer, or twice as many. Ovary 1-celled, many-ovuled. Styles as many as the sepals and alternate with them. Capsule 4–5-valved, at length dehiscent to the base, the valves opposite the sepals. [Ancient name of the spurry.]

About 10 species, natives of the northern hemisphere.

Parts of the flower in 4's (or some flowers in 5's).
  Plant depressed-spreading; petals present. 1. *S. procumbens.*
  Plant erect; petals very minute or none. 2. *S. apetala.*
Parts of the flower in 5's.
  Leaves opposite, not fascicled.
    Petals equalling or shorter than the sepals. 3. *S. decumbens.*
    Petals and pods longer than the sepals. 4. *S. saginoides.*
  Leaves fascicled in the axils; petals exceeding the sepals. 5. *S. nodosa.*

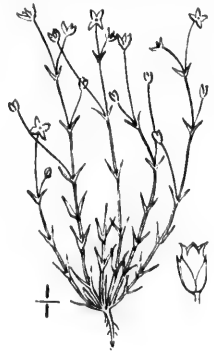


1. **Sagina procúmbens** L. Procumbent Pearlwort. (Fig. 1494.)

Sagina procumbens L. Sp. Pl. 128. 1753.

Annual or perennial, branching, decumbent, depressed or spreading, glabrous or minutely downy, matted, 1′–3′ high. Leaves linear, subulate, 1″–3″ long, connate at the base; flowers about 1″ broad, numerous; peduncles capillary, longer than the leaves, often recurved at the end after flowering; sepals 4, sometimes 5, ovate-oblong, obtusish, generally longer than the petals, which are occasionally wanting; capsule about equalling the calyx; stamens 4, rarely 5.

In moist places, Newfoundland and Greenland to New Jersey and Pennsylvania. Also in northern Michigan. Native of Europe and Asia. Our plant is probably in part naturalized from Europe, as it is in Mexico and in South America. May–Sept.



2. **Sagina apétala** Ard. Small-flowered Pearlwort. (Fig. 1495.)

Sagina apetala Ard. Animad. Bot. Spec. 2: *pl. 5.* 1764.

Erect or ascending, annual, glabrous, filiform, 1′–4′ high. Leaves linear-subulate, glabrous or sparingly ciliate, 1″–4″ long; flowers 1″ broad or less; peduncles elongated, capillary, erect; sepals 4, ovate or oval, obtuse; petals none, or 4 and very minute; pod ovoid, nearly twice the length of the calyx.

In dry soil in woods and fields, Massachusetts to New Jersey and Pennsylvania; rare. Apparently introduced. Native of Europe. Regarded by Bentham as a mere form of the preceding species. June.

3. Sagina decúmbens (Ell.) T. & G. Decumbent Pearlwort. (Fig. 1496.)

Spergula decumbens Ell. Bot. S. C. & Ga. 1: 523. 1817.
Sagina decumbens T. & G. Fl. N. A. 1: 177. 1838.
Sagina subulata T. & G. Fl. N. A. 1: 178. 1838. Not Presl, 1826.

Annual, tufted, stems decumbent or ascending, 2′–4′ long, glabrous or minutely glandular-pubescent above. Leaves narrowly linear, sometimes bristle-tipped, 3″–5″ long; peduncles filiform, 3″–15″ long; flowers 1″–1½″ broad; sepals, petals and styles 5; stamens 5 or 10; petals equalling or shorter than the calyx; pod ovoid-oblong, nearly twice as long as the calyx; sepals acutish or obtuse.

In dry soil, eastern Massachusetts to Illinois, south to Florida, Missouri and Louisiana. March–May.

Sagina decúmbens Smithii (A. Gray) S. Wats. Bibl. Index, 1: 105. 1878.
Sagina subulata var. *Smithii* A. Gray, Man. Ed. 5. 95. 1867.
Slender, stems erect or nearly so; flowers apetalous. Plant with the aspect of *S. apetala*, but the parts of the flower in 5's. Southeastern Pennsylvania and southern New Jersey.

4. Sagina saginoides (L.) Britton. Arctic Pearlwort. (Fig. 1497.)

Spergula saginoides L. Sp. Pl. 441. 1753.
Sagina Linnaei Presl, Rel. Haenk. 2: 14. 1835.
Sagina saginoides Britton, Mem. Torr. Club, 5: 151. 1894.

Perennial, glabrous, tufted, 1′–4′ high, few-flowered or the flowers solitary at the ends of the stems. Leaves linear-subulate, or filiform, 2″–5″ long, acuminate or mucronate; flowers 1½″–2½″ broad; sepals, petals and styles 5; stamens 10; sepals oval, obtuse, half the length of the ovoid-oblong capsule.

On rocks, Labrador, Anticosti and in arctic America. Also in the higher Rocky Mountains, south to Colorado and Utah, and in California. Also in alpine and arctic Europe and Asia. Summer.

5. Sagina nodòsa (L.) Fenzl. Knotted Pearlwort. (Fig. 1498.)

Spergula nodosa L. Sp. Pl. 440. 1753.
Sagina nodosa Fenzl, Verbr. Alsin. 18. 1833.

Perennial, tufted, erect or decumbent, 2′–6′ high, stems sparingly branched, slender, glabrous, or slightly glandular-pubescent above. Lower leaves linear, teretish, 4″–8″ long, mucronulate, the upper shorter and with clusters of minute ones in their axils; flowers few, about 3″ broad, terminating the stem and branches; sepals, petals and styles 5; stamens 10; peduncles 3″–8″ long; sepals ovate-oblong, obtuse, 1″ long; petals obovate, longer than the calyx, as is also the ovoid pod.

In wet, sandy places, coast of New Hampshire and Maine to Greenland; shores of Lake Superior, Lake Winnipeg and of the Arctic Sea. Also in northern Europe and Asia. Summer.

15. ARENÀRIA L. Sp. Pl. 423. 1753.

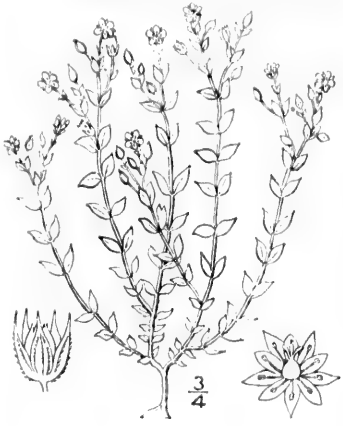
[ALSINE Wahl. Fl. Lapp. 127. 1812. Not L. 1753.]

Annual or perennial, mainly tufted herbs, with sessile leaves, and terminal cymose or capitate, rarely axillary and solitary, white flowers. Sepals 5. Petals 5, entire or scarcely emarginate, rarely none. Stamens 10. Styles generally 3 (rarely 2–5). Ovary 1-celled, many-ovuled. Capsule globose or oblong, dehiscent at the apex by as many valves or teeth as there are styles, or twice as many. Seeds reniform-globose or compressed. [Latin, sand, in allusion to the habitat of many species.]

About 150 species, of wide geographic distribution; not common in tropical regions.

Valves of the capsule 2-cleft or 2-toothed, sometimes appearing as if double the number of the styles.
- Leaves ovate or oblong.
  - Sepals acuminate; annual herb of waste places. 1. *A. serpyllifolia.*
  - Sepals obtuse or scarcely acute; perennial; arctic. 2. *A. ciliata.*
- Leaves subulate or setaceous.
  - Cymes very dense; stems 1′–4′ tall. 3. *A. Hookeri.*
  - Cymes loose; stems 4′–15′ tall. 4. *A. Fendleri.*

Valves of the capsule entire (Genus ALSINE Wahl).
- Leaves rigid, subulate or setaceous.
  - Arctic or alpine, densely tufted, 1′–3′ high.
    - Flowers 5″–8″ broad. 5. *A. biflora.*
    - Flowers 2″–3″ broad. 6. *A. verna.*
  - Neither arctic nor alpine, tufted but diffuse, 4″–16″ high.
    - Leaves densely imbricated; pine barren species. 7. *A. Caroliniana.*
    - Leaves fascicled in the axils.
      - Sepals ovate or ovate-lanceolate, 2″ long; plant bright green. 8. *A. stricta.*
      - Sepals narrowly lanceolate, long-acuminate, 2½″ long; plant pale green. 9. *A. Texana.*
- Leaves soft, herbaceous; narrowly linear or filiform.
  - Sepals prominently ribbed; southern. 10. *A. patula.*
  - Sepals not ribbed; alpine and northern. 11. *A. Groenlandica.*



1. Arenaria serpyllifòlia L. Thyme-leaved Sandwort. (Fig. 1499.)

Arenaria serpyllifolia L. Sp. Pl. 423. 1753.

Annual, slender, slightly downy-pubescent, widely branched and diffuse, 2′–8′ high. Leaves ovate, 2″–4″ long, 1½″–2″ wide, acute; pedicels slender, 2″–6″ long; bracts ovate, resembling the leaves; flowers 2″ broad or less, very numerous in cymose panicles; sepals ovate, 1½″ long, acute or mucronate, 3–5-nerved, scarious-margined; petals obovate or oblong, usually shorter; capsule ovoid, slightly shorter than or equalling the calyx, dehiscent by 6 short apical valves; seeds rough.

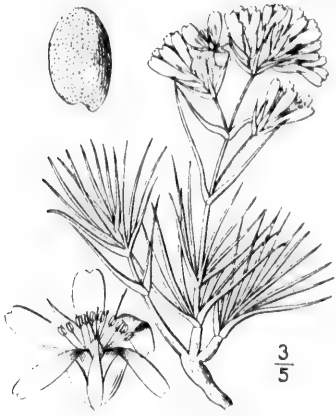
In dry or rocky places, common throughout eastern North America, extending across the continent. Naturalized from Europe. Native also of northern Asia, and widely distributed as a weed. May–Aug.

2. Arenaria ciliàta L. Fringed Sandwort. (Fig. 1500.)

Arenaria ciliata L. Sp. Pl. 425. 1753.

Perennial, tufted, glandular-puberulent, stems very slender, creeping or ascending, pubescent in lines, 1′–5′ long, or the flowering branches erect. Leaves ovate or oblong, obtuse or acute at the apex, sessile or very nearly so, 1″–3″ long, ciliate or glabrous; peduncles filiform, erect, mostly 1-flowered; flowers about 3″ broad; sepals ovate or oblong, obtuse, nerveless or faintly 1-nerved, about as long as the petals; capsule oblong, twice as long as the calyx, its 3 valves deeply 2-cleft; seeds slightly roughened.

Quebec to Greenland. Also in arctic and alpine Europe. The American plant is referred by Dr. B. L. Robinson to the var. *humifusa* Hornem.—having glabrous leaves and nerveless sepals so far as observed, and may be specifically distinct from the European. In Europe the species has been separated into several varieties. Summer.



3. Arenaria Hóokeri Nutt. Hooker's Sandwort. (Fig. 1501.)

Arenaria Hookeri Nutt.; T. & G. Fl. N. A. 1: 178. 1838.

Tufted from a deep woody root, 2′–3′ high. Leaves linear-subulate, rigid, very sharp-pointed, densely imbricated, glabrous, 6″–12″ long; flowering stems short, finely and densely pubescent; bracts lanceolate-subulate, scarious-margined, the margins ciliolate; cyme dense, 8″–18″ broad, its rays short and pubescent; sepals lanceolate-subulate, pubescent, shorter than the similar bracts and about one-half the length of the petals; capsule not seen.

In dry or rocky soil, Nebraska and Colorado to Montana. June–Aug.

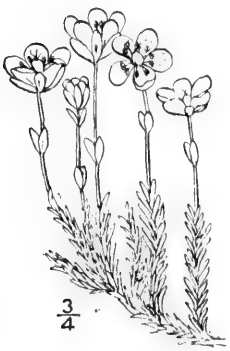
4. Arenaria Féndleri A. Gray. Fendler's Sandwort. (Fig. 1502.)

Arenaria Fendleri A. Gray, Mem. Am. Acad. (II.) 4: 13. 1849.

Perennial by a woody root, pale green, glandular-pubescent above; stems tufted, erect, very slender, usually several times forked, 4′–15′ tall, the internodes 1′–2′ long. Lower leaves subulate or setaceous, glabrous or minutely ciliate, 1′–4′ long, about ¼″ wide, the upper gradually smaller and somewhat connate at the base; cyme loose, its forks filiform, several-flowered; pedicels very glandular, 3″–12″ long; flowers 4″–6″ broad; sepals linear-lanceolate, acuminate, scarious-margined, nearly as long as the obovate petals; capsule narrowly oblong, rather shorter than the sepals, 3-valved, the valves 2-toothed.

In dry, usually rocky soil, Nebraska and Wyoming to Utah, south to New Mexico and Arizona. June–Aug.

5. Arenaria biflòra (L.) S. Wats. Arctic Sandwort. (Fig. 1503.)



Stellaria biflora L. Sp. Pl. 422. 1753.

Arenaria Sajanensis Willd.; Schlecht. Berl. Mag. Natf. **1816**: 200. 1816.

Arenaria biflora S. Wats. Bibl. Index, 1: 94. 1878.

Perennial, stem woody below, tufted, glandular-pubescent, 1′–2′ high. Leaves linear or linear-lanceolate, sessile and sheathing, densely imbricated, somewhat broadest at the base, 3″–4″ long, semiterete, obtuse, glabrous, ciliate or glandular-pubescent, generally falcate, strongly keeled by the midvein; peduncles slender, terminal, 1–2-flowered; flowers 5″–8″ broad; sepals linear-oblong, 3-nerved, obtusish; petals obovate, twice as long as the calyx; capsule slightly longer than the sepals; seeds smooth.

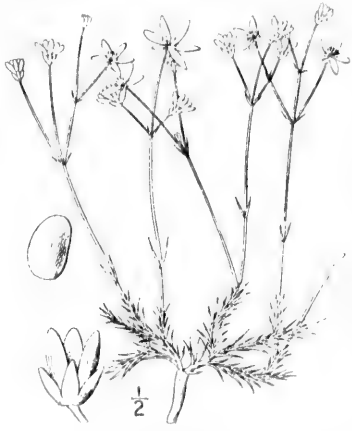
Greenland and Labrador to Quebec, west through Arctic America to Alaska, south in the Rocky Mountains to Arizona. Also in Asia. Summer.

6. Arenaria vérna L. Vernal Sandwort. (Fig. 1504.)

Arenaria verna L. Mant. 72. 1767.
Arenaria hirta Wormsk.; Hornem. Fl. Dan. *pl.* 1646.

Perennial, densely tufted, flowering stems erect or ascending, 1′–5′ high, branching, glabrous or sparingly pubescent. Leaves subulate-linear, rather rigid, imbricated below, more distant above, 2″–4″ long, the upper a little shorter and broader than the lower; flowers 2″–3″ broad, numerous in loose cymes; pedicels 2″–4″ long; sepals lanceolate, acuminate, 1½″–2″ long, 3-ribbed; petals slightly longer than the sepals; capsule 3-valved, exceeding the sepals; seeds rugose.

In rocky places, Smuggler's Notch, Vt.; Mt. Albert, Gaspé, Quebec; Labrador and arctic America, south in the Rocky Mountains to Arizona. Also in northern and alpine Europe and Asia. Summer.



8. Arenaria stricta Michx.

Arenaria stricta Michx. Fl. Bor. Am. 1: 274. 1803.
Alsine Michauxii Fenzl, Verbr. Alsin. table, p. 18. 1833.
Arenaria Michauxii Hook. f. Trans. Linn. Soc. 23: 287. 1867.

Perennial from a short root, tufted, slender, erect or ascending, glabrous, dark green, 6′–16′ high, simple or nearly so to the diffuse cymose bracted inflorescence. Leaves slender, rigid, subulate or filiform, broadest at the sessile base, 4″–10″ long, distinctly 1-ribbed, spreading, with numerous others fascicled in the axils; pedicels 3″–18″ long; flowers 4″–5″ broad; calyx ovoid-oblong in fruit; sepals lanceolate or ovate-lanceolate, acute, 3-ribbed, 2″ long, about half the length of the petals and slightly shorter than the ovoid pod; seeds minutely rugose.

In dry, rocky places, especially limestone bluffs, Ontario and Vermont to Virginia, west to Minnesota, Wisconsin and Missouri. June-July.

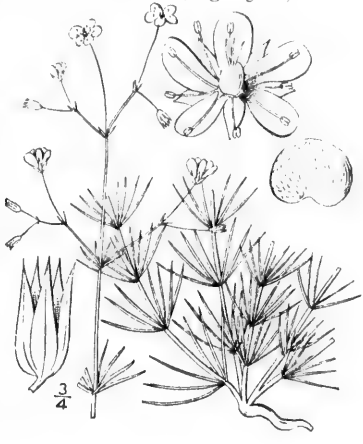
7. Arenaria Caroliniàna Walt. Pine-barren Sandwort. (Fig. 1505.)

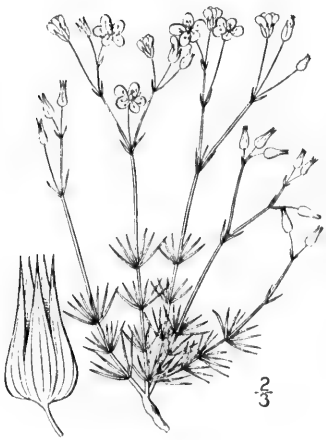
Arenaria Caroliniana Walt. Fl. Car. 141. 1788.
Arenaria squarrosa Michx. Fl. Bor. Am. 1: 273. 1803.

Perennial from a deep root, tufted, more or less glandular-pubescent, base woody, flowering stems ascending or erect, 4′–10′ high, nearly simple up to the cymose inflorescence. Lower leaves subulate, rigid, 2″–3″ long, channeled on the inner surface, keeled by the prominent midrib, densely imbricated; upper leaves similar, distant; cymes terminal, few-flowered; pedicels ascending or erect; flowers 5″–8″ broad; sepals ovate-oblong, obtuse, nerveless; petals oblanceolate, 3–4 times as long as the calyx; pod short-ovoid, twice as long as the calyx, 3-valved; seeds very nearly smooth.

In dry sand, southeastern New York, pine barrens of New Jersey, south near the coast to Florida and Georgia. May-July.

Rock Sandwort. (Fig. 1506.)



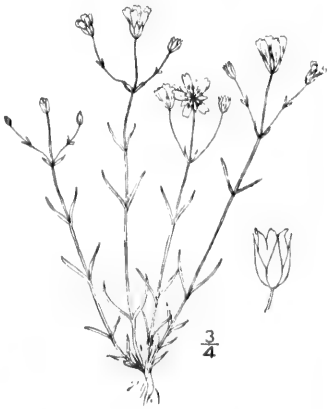


9. Arenaria Texàna (Robinson) Britton. Texas Sandwort. (Fig. 1507.)

Arenaria stricta Texana Robinson; Britton, Mem. Torr. Club, 5: 152. 1894.

Similar to the preceding species but lower, stiffer, pale green, stems erect, 4′–7′ tall, simple up to the inflorescence, conspicuously thickened at the nodes, the internodes mostly very short. Leaves subulate, stiff, 3″–6″ long, strongly connate, with numerous minute or similar ones fascicled in their axils; cymes small, rather few-flowered, compact or rather loose; pedicels rarely more than 8″ long; flowers 4″–5″ broad; calyx narrowly conic in fruit; sepals narrowly lanceolate, strongly 3-ribbed, long-acuminate, 2″ long, longer than the capsule.

In dry, rocky soil, Kansas and Missouri to Texas. June–July.



10. Arenaria pátula Michx. Pitcher's Sandwort. (Fig. 1508.)

Arenaria patula Michx. Fl. Bor. Am. 1: 273. 1803.
Arenaria Pitcheri Nutt.; T. & G. Fl. N. A. 1: 180. 1838.

Annual, branched from the base, slender or even filiform, erect or ascending, 4′–10′ high, finely pubescent or glabrous. Leaves soft, herbaceous, linear-filiform, 4″–12″ long, ½″ wide or less, obtuse or acutish; cyme terminal, several-flowered, diffuse; pedicels slender; sepals lanceolate, acuminate, 3–5-nerved, about half the length of the emarginate petals and equalling the pod; seeds rough.

In open, dry places, Kentucky to Illinois and Kansas, south to Alabama, Tennessee and Texas. April–May.

11. Arenaria Groenlándica (Retz) Spreng. Mountain Sandwort or Starwort. (Fig. 1509.)

Stellaria Groenlandica Retz, Fl. Scand. Ed. 2, 107. 1795.
Arenaria Groenlandica Spreng. Syst. 2: 402. 1825.

Perennial from a slender rootstock, densely tufted, glabrous, flowering stems slender, 2′–5′ high; leaves linear-filiform, the upper distant, the lower matted, 3″–6″ long; cyme terminal, several-flowered; pedicels 2″–6″ long, filiform; flowers 4″–6″ broad; sepals oblong, obtuse, scarious-margined, nerveless; half the length of the entire or retuse petals and shorter than the oblong pod; seeds compressed, smooth.

On dry rocks, Labrador and Greenland to northern New York, Connecticut, the mountains of southern New York and Pennsylvania, and on the higher Alleghanies of Virginia and North Carolina. June–Sept.

16. MOEHRÍNGIA L. Sp. Pl. 359. 1753.

Low herbs, our species perennials, with oblong ovate ovate-lanceolate or linear soft leaves, sessile or very short-petioled, and small white flowers solitary in the axils or in terminal cymes. Sepals and petals 4 or 5. Stamens 8 or 10. Capsule oblong or ellipsoid, few-seeded. Seeds mostly smooth and shining, appendaged at the hilum by a membranous broad strophiole. [In honor of P. H. G. Moehring, naturalist of Danzig.]

About 20 species, natives of the northern hemisphere. Only the following are known to occur in North America.

Leaves oblong or oval, usually obtuse; sepals obtuse or acute, much shorter than the petals. 1. *M. lateriflora.*

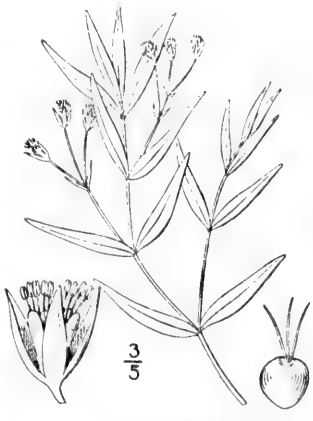
Leaves lanceolate, usually acute; sepals acuminate, longer than the petals. 2. *M. macrophylla.*

1. Moehringia lateriflòra (L.) Fenzl. Blunt-leaved Moehringia or Sandwort. (Fig. 1510.)

Arenaria lateriflora L. Sp. Pl. 423. 1753.
Moehringia lateriflora Fenzl, Verbr. Alsin. table, p. 18. 1833.

Stems erect or ascending, simple or at length sparingly branched, finely pubescent throughout, 4′–12′ high. Leaves thin, oval or oblong, ½′–1′ long, obtuse, spreading, the margins and nerves ciliate; cymes lateral and terminal, few-flowered or flowers sometimes solitary; flowers 3″–4″ broad, their parts in 4's or 5's; sepals oblong, obtuse or acute, half as long as the nearly entire petals; ovary at first 3-celled; capsule ovoid, nearly twice as long as the calyx, dehiscent by 3 2-cleft valves.

In moist places and on shores, southern New York and New Jersey to Missouri, north to Nova Scotia and Alaska, extending in the Rocky Mountains to Utah. Also in Oregon and British Columbia and in northern Europe and Asia. May–July.



2. Moehringia macrophýlla (Hook.) Torr. Large-leaved Moehringia or Sandwort. (Fig. 1511.)

Arenaria macrophylla Hook. Fl. Bor. Am. 1: 102. *pl. 37.* 1830.

Moehringia macrophylla Torr. Bot. Wilkes' Exp. 246. 1874.

Stems decumbent, puberulent, usually branched, 6′–15′ long. Leaves lanceolate, acute or acuminate (rarely obtusish) at the apex, narrowed at the base, 1′–3′ long, 2″–5″ wide; cymes terminal or becoming axillary by the elongation of the stem, 1–5-flowered; flowers about 3″ broad; sepals lanceolate or ovate-lanceolate, long-acuminate, longer than the small petals; capsule rather shorter than the calyx, 3-valved, the valves 2-cleft.

Isle St. Ignace Lake Superior, to British Columbia, south to California. May–Aug.

17. AMMODÈNIA J. G. Gmel. Fl. Sib. 4: 160. 1769.

[HONKENYA Ehrh. Beitr. 2: 180. 1788.]

Perennial fleshy maritime herbs, with ovate obovate oblong or oblanceolate leaves, and rather small flowers, solitary in the axils and in the forks of the stem or branches. Sepals 5 (rarely 4). Petals the same number, entire. Stamens 8 or 10. Disk prominent, 8–10-lobed, glandular. Styles 3–5. Capsule subglobose, fleshy, 3–5-valved when mature, the valves entire. Seeds numerous, obovate, not strophiolate. [Greek, referring to the growth of these plants in sand.]

Two species, the following of sea beaches throughout the north temperate zone, the other of the coasts of northwestern America and northeastern Asia.

1. **Ammodenia peploides** (L.) Rupr. Sea-beach Sandwort. (Fig. 1512.)

Arenaria peploides L. Sp. Pl. 423. 1753.
Honkenya peploides Ehrh. Beitr. 2: 181. 1788.
Ammodenia peploides Rupr. Beitr. Pfl. Russ. Reich. 2: 25. 1845.

Perennial from long rootstocks, glabrous, fleshy throughout, stems stout, tufted, simple or branched, erect, diffuse or ascending, 3′–10′ long. Leaves sessile, clasping, ovate or oval, acute or mucronate, 5″–10″ long; flowers axillary and terminal, 3″–4″ broad; peduncles stout, 2″–8″ long; ovary 3-celled (rarely 4–5-celled); sepals ovate, obtusish, about equalling the petals, shorter than the depressed-globose mostly 3-valved pod; seeds smooth, short-beaked at the hilum, not strophiolate.

On sands of the seashore, New Jersey to arctic America. Also on the shores of northern Europe and Asia. Called also Sea Chickweed and Sea Purslane. June–July.

18. SPÉRGULA L. Sp. Pl. 440. 1753.

Annual branched herbs, with subulate stipulate leaves, much fascicled in the axils, and terminal cymes of white flowers. Sepals and petals 5. Stamens 10 or 5. Styles 5, alternate with the sepals. Capsule 5-valved, the valves opposite the sepals. Seeds compressed, acute-margined or winged. [Latin, (from *spergo*) to scatter.]

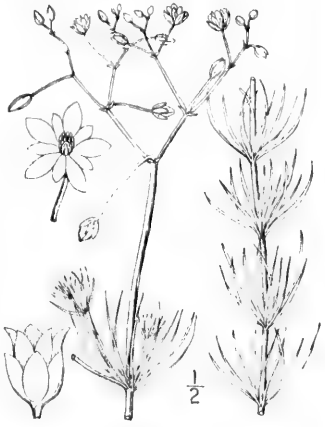
Two or three species, natives of the Old World. The following is widely distributed as a weed.

1. Spergula arvénsis L. Spurry. Corn Spurry. (Fig. 1513.)

Spergula arvensis L. Sp. Pl. 440. 1753.

Slender, glabrous or sparingly pubescent, branching at or near the base, erect or ascending, 6′–18′ high. Leaves narrowly linear or subulate, 1′–2′ long, clustered at the nodes in two opposite sets of 6–8 together, appearing verticillate; stipules small, connate; flowers 2″–3″ broad, numerous in loose terminal cymes; pedicels slender, divaricate; sepals ovate, 1½″–2″ long, slightly longer than the petals; stamens 10 or 5 in flowers on the same plant; capsule ovoid, longer than the calyx.

In fields and waste places, frequent as a weed throughout eastern Canada and the Eastern and Middle States, and locally westward. Adventive or naturalized from Europe. Called also Sandweed. Summer.



19. TÍSSA Adans. Fam. Pl. 2: 507. 1763.

[Buda Adans. Fam. Pl. 2: 507. 1763.]
[Spergularia Pers. Syn. 1: 504. 1805.]

Low annual or perennial herbs, mostly with fleshy linear or setaceous leaves, often with others clustered in the axils, and small pink or whitish flowers in terminal racemose bracted or leafy cymes. Stipules scarious. Sepals 5. Petals the same number, rarely fewer, or none, entire. Stamens 2–10. Ovary 1-celled, many ovuled; styles 3. Pod 3-valved to the base. Seeds reniform-globose or compressed, smooth, winged or tuberculate. [Name unexplained.]

About 20 species, of wide geographic distribution, most of them inhabitants of saline shores or salt marshes.

Species of salt marshes or sea beaches; leaves very fleshy.
  Pedicels 1½–2 times the length of the sepals; flowers pink. 1. *T. marina.*
  Pedicels 2–4 times the length of the sepals; flowers pale or white. 2. *T. Canadensis.*
Species mostly of dry sandy soil; leaves scarcely fleshy. 3. *T. rubra.*

1. **Tissa marina** (L.) Britton. Salt-marsh Sand Spurry. (Fig. 1514.)

Arenaria rubra var. *marina* L. Sp. Pl. 423. 1753.
Spergularia salina Presl, Fl. Cech. 95. 1819.
Buda marina Dumort. Fl. Belg. 110. 1827.
Spergularia media A. Gray, Man. Ed. 5, 95. 1867.
Tissa marina Britton, Bull. Torr. Club, **16**: 126. 1889.
Buda marina var. *minor* S. Wats. in A. Gray, Man. Ed. 6, 90. 1890.

Annual, erect, ascending or nearly prostrate, from fibrous roots, 4′–8′ high, but very variable, freely branching, glabrous or glandular-pubescent. Stipules ovate; leaves linear, terete, very fleshy, ½′–1½′ long, ½″–1″ wide, often much fascicled in the axils; pedicels spreading or ascending, 2″–5″ long; flowers numerous, pink; sepals ovate, acute or obtuse, 1″–3″ long; capsule a little longer than the calyx; seeds smooth, or roughened with projecting processes, wingless, or winged.

In salt marshes, New Brunswick to Florida. Also in those of the Pacific Coast, and of Europe and northern Asia. Called also Sea-side Sandwort. Summer.

2. **Tissa Canadénsis** (Pers.) Britton. Northern Sand Spurry. (Fig. 1515.)

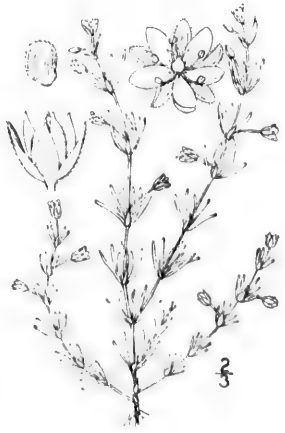
Arenaria Canadensis Pers. Syn. **1**: 504. 1805.
Buda borealis S. Wats. in A. Gray, Man. Ed. 6, 90. 1890.
Tissa salina Britton, Bull. Torr. Club, **16**: 127. 1889. Not *Spergularia salina* Presl.
Tissa Canadensis Britton, Mem. Torr. Club, **5**: 152. 1894.

Annual, slender, diffuse and spreading, entirely glabrous, 2′–5′ high. Leaves linear, fleshy, teretish, 5″–8″ long, mainly obtuse, generally simply opposite and not fascicled; stipules broadly ovate; pedicels slender, spreading, 3″–6″ long, at length much exceeding the calyx; sepals 1″ long; flowers pale or white; capsule twice the length of the calyx; seeds smooth or papillose, usually wingless.

On muddy shores, Maine to Labrador. Summer.

3. **Tissa rùbra** (L.) Britton. Sand Spurry. Purple Sandwort. (Fig. 1516.)

Arenaria rubra L. Sp. Pl. 423. 1753.
Buda rubra Dumort. Fl. Belg. 110. 1827.
Spergularia rubra Presl, Fl. Cech. 93. 1819.
Tissa rubra Britton, Bull. Torr. Club, **16**: 127. 1889.



Annual or biennial, depressed or ascending, very leafy up to the inflorescence, glabrous or sparingly glandular-pubescent above, 2′–6′ high, often forming dense little mats. Leaves linear, flat, scarcely fleshy, 2″–4″ long; flowers bright pink, 1″–1½″ broad; stipules ovate-lanceolate, acuminate; sepals ovate-lanceolate, acutish; pedicels slender, spreading, 2″–4″ long; pods about equalling the calyx; seeds wingless, rough with projecting points.

In waste places and along roadsides, or sometimes maritime, Nova Scotia to Pennsylvania, western New York and Virginia. Apparently adventive from Europe in large part, but perhaps indigenous northward. Also introduced in California and Oregon. Native of Europe and Asia. Summer.

20. LOEFLÍNGIA L. Sp. Pl. 35. 1753.

Low annual glandular-puberulent diffusely branched herbs, with small subulate or setaceous stipulate leaves and very small sessile flowers, solitary or glomerate in the axils. Sepals 5, rigid, keeled, acuminate or awn-tipped, the outer ones commonly with a tooth on each side. Petals 3–5, minute, or wanting. Stamens 3–5, perigynous. Ovary triangular-pyramidal, 1-celled, many-ovuled. Capsule 3-valved. Seeds oblong or obovate, attached near their bases; embryo somewhat curved; cotyledons accumbent. [In honor of Peter Loefling, 1729–1756, Swedish traveler.]

About 5 species, natives of southwestern North America, the Mediterranean region and central Asia. Besides the following, 2 others occur in the southwestern United States.

1. Loeflingia Texàna Hook. Texan Loeflingia. (Fig. 1517.)

Loeflingia Texana Hook. Ic. Pl. 3: *pl. 275.* 1840.

Finely and densely glandular-puberulent, stems much branched, bushy, 3′–6′ high, the branches slender, terete, ascending or those bearing flowers secund and recurved. Leaves subulate, 2″–3″ long, appressed-ascending; flowers less than 1″ broad; sepals nearly or quite straight, the 3 outer ones or all with a setaceous tooth on each side; petals much shorter than the sepals; stamens usually 3; capsule shorter than the calyx; seeds obovate.

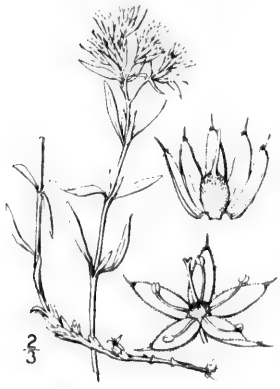
In dry soil, Nebraska to Texas. April–June.

21. PARONÝCHIA Adans. Fam. Pl. 2: 272. 1763.

Perennial tufted herbs, often woody at the base, with opposite leaves, scarious stipules, and small clustered scarious-bracted apetalous flowers. Calyx 5-parted, the segments bristle-pointed. Stamens 5, inserted at the base of the calyx, sometimes alternate with as many staminodia. Ovary ovoid or subglobose, narrowed upward into the style; style 2-cleft at the apex; ovule solitary, amphitropous. Utricle membranous, included in the calyx, 1-seeded. [Greek, for a disease of the fingers and a plant supposed to cure it.]

About 40 species, natives of warm and temperate regions. Besides the following about 5 others occur in the Southern States, one in the Rocky Mountains, and one in California.

Awns of the calyx-segments erect. 1. *P. argyrocoma.*
Awns of the calyx-segments divergent
  Stipules 2-cleft. 2. *P. sessiliflora.*
  Stipules entire.
    Lowest leaves obtuse, uppermost mucronate or bristle-pointed. 3. *P. Jamesii.*
    Leaves all acute, mucronate or bristle-pointed. 4. *P. dichotoma.*



1. Paronychia argyrócoma (Michx.) Nutt. Silver Whitlow-wort. (Fig. 1518.)

Anychia argyrocoma Michx. Fl. Bor. Am. 1: 113. 1803.
Paronychia argyrocoma Nutt. Gen. 1: 160. 1818.

Stem erect or ascending, much branched, 3′–8′ high, clothed with silvery appressed scale-like hairs. Leaves linear, 1-nerved, acute or mucronate at the apex, pubescent or nearly glabrous; stipules silvery-white, scarious, entire, usually shorter than the leaves; flowers in forking cymes, subtended by the large silvery membranous bracts; calyx-segments 2″–2½″ long, their awns erect, nearly as long as the segments; style filiform, minutely 2-cleft at the summit; staminodia minute and much shorter than the filaments or wanting.

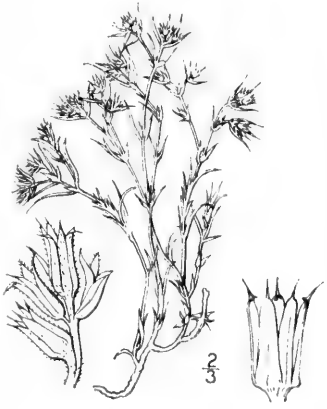
In rocky places, Maine and New Hampshire to Tennessee and Georgia. Ascends to 4200 ft. in North Carolina. Called also Silver Chickweed and Silverhead. July–Sept.

2. Paronychia sessiliflòra Nutt. Low Whitlow-wort. (Fig. 1519.)

Paronychia sessiliflora Nutt. Gen. 1: 160. 1818.

Densely tufted from stout thick roots, low, the internodes very short and hidden by the imbricated leaves and stipules. Leaves linear-subulate, glabrous or puberulent, the lowest erect and obtuse, the uppermost recurved-spreading, mucronate or bristle-pointed; stipules 2-cleft, usually shorter than the leaves; bracts entire, mostly shorter than the flowers; flowers sessile, solitary or several together; calyx 1″–1½″ long, its segments hooded at the apex, tipped with divergent awns of nearly their own length; staminodia about as long as the filaments.

In dry soil, Northwest Territory to Nebraska and Wyoming. Aug.–Sept.



3. Paronychia Jàmesii T. & G. James' Whitlow-wort. (Fig. 1520.)

Paronychia Jamesii T. & G. Fl. N. A. 1: 170. 1838.

Scabrous-pubescent, stems 3′–8′ high, much branched from the base. Leaves linear-subulate, the lowest obtuse, the uppermost mucronate or bristle-pointed; stipules entire; flowers in small cymes; bracts shorter than the calyx; calyx 1″–1½″ long, the segments hooded at the apex, tipped with divergent awns of about one-fourth their length; staminodia about as long as the filaments.

In dry soil, Nebraska and Colorado to Texas. July–Oct.

Paronychia Jàmesii deprèssa Nutt.; T. & G. Fl. N. A. 1: 171. 1838.

Lower, rarely over 3′ high, densely tufted; internodes very short; leaves imbricated. Nebraska to Texas.

4. Paronychia dichótoma (L.) Nutt. Forking Whitlow-wort. Nailwort. (Fig. 1521.)

Achyranthes dichotoma L. Mant. 51. 1767.

Paronychia dichotoma Nutt. Gen. 1: 159. 1818.

Much branched from the thick woody base, glabrous or puberulent, 4′–14′ tall. Leaves subulate, all acute, mucronate or bristle-tipped; stipules entire, often 5″–6″ long, tapering into a slender awn; calyx 1″–2″ long, the awns of its segments divergent, short; staminodia of minute bristles hardly one-fourth as long as the filaments; styles nearly as long as the perianth-segments, usually cleft for about one-fourth their length.

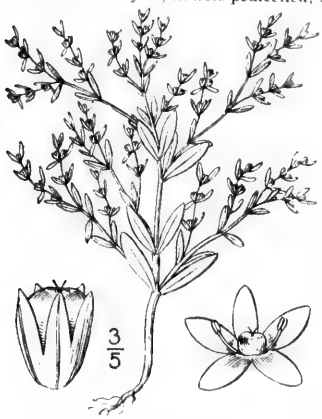
In dry soil, Maryland to North Carolina, west to Arkansas and Texas. July–Oct.

22. ANÝCHIA Michx. Fl. Bor. Am. 1: 112. 1803.

Annual herbs, with repeatedly forking stems, elliptic oval or oblanceolate opposite mostly punctate very short-petioled leaves, small scarious stipules, and minute green apetalous flowers. Calyx 5-parted, its segments oblong, concave, not awned. Stamens 2–5, inserted on the base of the calyx; filaments filiform. Staminodia wanting. Ovary subglobose, compressed; styles 2, distinct, or united at the base; ovule solitary, amphitropous. Utricle subglobose, somewhat compressed, longer than the calyx. [Derivation same as the preceding genus.]

Only the following species, natives of eastern North America.

Pubescent; flowers sessile; stems mostly prostrate or ascending. 1. *A. dichotoma.*
Glabrous or nearly so; flowers pedicelled; stems usually erect. 2. *A. Canadensis.*



1. Anychia dichótoma Michx. Forked Chickweed. (Fig. 1522.)

Anychia dichotoma Michx. Fl. Bor. Am. 1: 113. 1803.

Pubescent, stems mostly prostrate or ascending, much forked, 3′–10′ high, the internodes often shorter than the leaves. Leaves narrowly elliptic, 2″–4″ long, ½″–1″ wide, mucronate or acute at the apex, sessile, or the base tapering into a very short petiole, usually very numerous and crowded; flowers sessile in the forks, more or less clustered, scarcely ½″ high, inconspicuous except when fully expanded; stamens commonly 2 or 3, sometimes 5

In dry woods, thickets and in open places, Maine to Minnesota, south to Florida, Alabama and Arkansas. Ascends to 5200 ft. in Georgia. June–Sept.

2. Anychia Canadénsis (L.) B.S.P. Slender Forked Chickweed. (Fig. 1523.)

Queria Canadensis L. Sp. Pl. 90. 1753.
Queria capillacea Nutt. Gen. 1: 150. 1818.
Anychia dichotoma var. *capillacea* Torr. Fl. U. S. 1: 273. 1824.
Anychia capillacea DC. Prodr. 3: 369. 1828.
Anychia Canadensis B.S.P. Prel. Cat. N. Y. 1888.

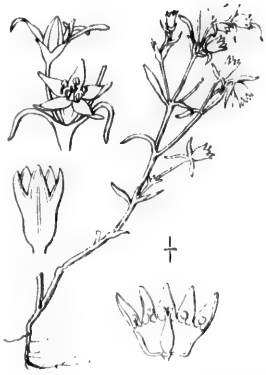
Glabrous or very nearly so, stem very slender or filiform, usually erect, repeatedly forked above, 6′–12′ tall, the internodes sometimes 1′ long, much longer than those of the preceding species. Leaves elliptic, oval or sometimes oblanceolate, 3″–8″ long, 1″–4″ wide, obtuse or short-pointed at the apex, narrowed into petioles about 1″ long, not crowded; flowers minute, more or less pedicelled.

In dry woods, Ontario to Massachusetts and Georgia, west to Minnesota and Arkansas. Ascends to 4200 ft. in North Carolina. June–Sept.

23. SCLERÁNTHUS L. Sp. Pl. 406. 1753.

Low annual herbs, with rather stiff forking stems, opposite subulate leaves connate at the base, no stipules and minute green clustered apetalous flowers. Calyx not bracted, deeply 5-lobed (rarely 4-lobed), the lobes awnless, the cup-like tube hardened. Stamens 1–10, inserted on the calyx-tube. Ovary ovoid; styles 2, distinct; ovule solitary, pendulous, amphitropous. Utricle 1-seeded, enclosed by the calyx. [Greek, referring to the hard calyx-tube.]

About 10 species, of wide geographic distribution in the Old World, the following naturalized from Europe as a weed.



1. **Scleranthus ánnuus** L. Knawel. German Knotgrass. (Fig. 1524.)

Scleranthus annuus L. Sp. Pl. 406. 1753.

Much branched from long and rather tough roots, the branches prostrate or spreading, 3′–5′ long, roughish-puberulent or glabrous. Leaves subulate, 2″–12″ long, ciliate, light green, often recurved, their bases membranous at the junction; tube of the calyx 10-angled, rather longer than the lobes, usually glabrous, the lobes somewhat angled on the back and their margins incurved.

In fields and waste places or on dry rocks, Quebec and Ontario to Pennsylvania and Florida, mostly near the coast. Naturalized from Europe. Very common in parts of the Eastern and Middle States. March–Oct.

Family 22. **NYMPHAEÀCEAE** DC. Propr. Med. Ed. 2, 119. 1816.

WATER LILY FAMILY.

Aquatic perennial herbs, with horizontal rootstocks, floating, immersed or rarely emersed leaves, and solitary axillary flowers. Sepals 3–5. Petals 5–∞. Stamens 5–∞; anthers erect, the connective continuous with the filament. Carpels 3–∞, distinct, united, or immersed in the receptacle. Stigmas distinct, or united into a radiate or annular disk; ovules 1–∞, orthotropous. Fruit indehiscent, separate or coherent. Seeds enclosed in pulpy arils, or rarely naked; cotyledons fleshy; hypocotyl very short.

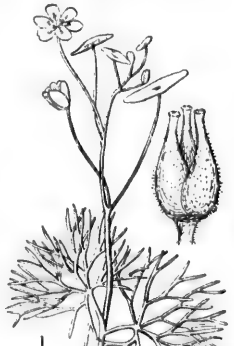
Eight genera and about 33 species, of wide geographic distribution in fresh-water lakes and streams.

Sepals and petals 3; stamens 6, hypogynous; carpels distinct, ovules few.	
Leaves dissected, excepting the small floating ones.	1. *Cabomba.*
Leaves peltate, entire, floating.	2. *Brasenia.*
Sepals 4–6; petals numerous or several; carpels united; ovules numerous.	
Petals small or minute; stamens hypogynous.	3. *Nymphaea.*
Petals large, numerous; stamens epigynous.	4. *Castalia.*
Sepals 4–5; petals numerous; carpels distinct, immersed in the receptacle; ovule 1.	5. *Nelumbo.*

1. **CABÓMBA** Aubl. Pl. Guian. 1: 321. 1775.

Stems slender, coated with gelatinous matter, branching. Leaves petioled, peltate, the floating ones small, entire; submerged ones opposite, palmately dissected into numerous capillary segments. Flowers small, white or yellow. Sepals and petals 3. Stamens 6; filaments slender; anthers extrorse. Carpels 2–4. Stigmas small, terminal; ovules commonly 3, pendulous. Fruit coriaceous, indehiscent, about 3-seeded. [Guiana name.]

A genus of 2 or possibly 3 species, natives of the warmer parts of America.



1. **Cabomba Caroliniàna** A. Gray. Cabomba. Carolina Water-shield. (Fig. 1525.)

Cabomba Caroliniana A. Gray, Ann. Lyc. N. Y. 4: 47. 1837.

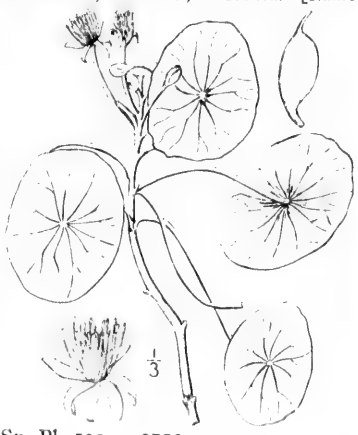
Stem several feet long, branching. Submerged leaves opposite or sometimes verticillate, petioled, 1′–2′ broad, centrally peltate, repeatedly divided; floating ones alternate or opposite, linear-oblong, 6″–10″ long; flowers long-peduncled from the upper axils, 6″–8″ wide, white, or yellow at base within; petals obovate; ripened carpels 3, separate, flask-shaped.

In ponds and slow streams, southern Illinois to North Carolina, south to Florida and Texas. May–Aug.

2. BRASÈNIA Schreb. Gen. Pl. 372. 1789.

Stem slender, several feet long, branching, covered with gelatinous matter as are the petioles, peduncles and lower leaf-surfaces. Leaves alternate, oval, entire, 2′–4′ long, long-petioled, centrally peltate, floating, palmately veined. Flowers axillary, purple. Sepals and linear petals 3. Stamens 12–18; filaments filiform. Carpels 4–18, separate. Ovules 2–3, pendulous from the dorsal suture. Ripe carpels indehiscent, coriaceous, 1–2-seeded. [Name unexplained.]

A monotypic genus of North America, Cuba, eastern and tropical Asia, west tropical Africa, and Australia.



1. Brasenia purpùrea (Michx.) Casp. Water-shield or -target. (Fig. 1526.)

Menyanthes nymphaeoides Thunb. Fl. Jap. 82. 1784. Not L. 1753.
Hydropeltis purpurea Michx. Fl. Bor. Am. 1: 324. *pl. 29.* 1803.
Menyanthes peltata Thunb. Nov. Act. Upsal. 7: 142. 1815.
Brasenia peltata Pursh, Fl. Am. Sept. 389. 1814.
Brasenia purpurea Casp. in Engl. & Prantl, Nat. Pfl. Fam. 3: Abt. 2, 6. 1890.

Rootstock slender. Leaves 2′–4′ long, 1½′–2′ wide, thick, rounded at each end; flowers 5″–6″ in diameter, on long stout peduncles; fruit oblong, 3″–4″ long.

In ponds and slow streams, Nova Scotia to Florida, west to Manitoba and Texas. Also in Cuba, Mexico, and at a few stations on the Pacific Coast from California to Washington. Summer.

3. NYMPHAÈA L. Sp. Pl. 510. 1753.

[Nuphar Sibth. & Smith, Fl. Graec. Prodr. 1: 391. 1806.]

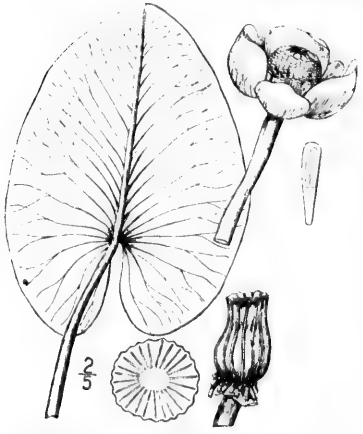
Aquatic herbs, with cylindric thick horizontal rootstocks, and large cordate leaves with a deep sinus. Flowers showy, yellow, or sometimes purplish. Sepals 5–6, concave, thick. Petals ∞, small, stamen-like, hypogynous. Stamens ∞, hypogynous. Carpels ∞, many-ovuled, united into a compound pistil. Stigmas disciform, 8–24-radiate. Fruit ovoid, naked. Seeds with endosperm. [Greek, water-nymph.]

A genus of about 8 species, natives of the north temperate zone.

Leaves broadly ovate or oval.
- Leaves 5′–12′ long; stigma 12–24-rayed; petals truncate, fleshy. — 1. *N. advena.*
- Leaves 3′–10′ long, stigma 9–12-rayed; petals spatulate, fleshy. — 2. *N. rubrodisca.*
- Leaves 2′–4′ long; stigma 7–10-rayed; petals spatulate, thin. — 3. *N. Kalmiana.*

Leaves narrowly ovate or ovate-lanceolate. — 4. *N. sagittaefolia.*

1. Nymphaea ádvena Soland. Large Yellow Pond Lily. (Fig. 1527.)



Nymphaea advena Soland. in Ait. Hort. Kew. 2: 226. 1789.
Nuphar advena R. Br. in Ait. Hort. Kew. Ed. 2, 3: 295. 1811.

Floating and emersed leaves 5′–12′ long, 5′–9′ broad, ovate or orbicular-oval, thick, the sinus 2′–5′ deep, generally open; submerged leaves, when present, thin-membranous, nearly orbicular, otherwise similar; petioles, peduncles and lower surfaces of the leaves often pubescent; flowers 1½′–3½′ in diameter, depressed-globose, yellow or tinged with purple; sepals 6, oblong, about 1½″ long; petals fleshy, oblong, truncate, 4″–5″ long; stamens in 5–7 rows; anthers about the length of the filaments; stigmatic disc undulate, yellow, or pale red, rays 12–24; fruit ovoid, not deeply constricted into a neck, 1½′–2′ long, about 1′ thick.

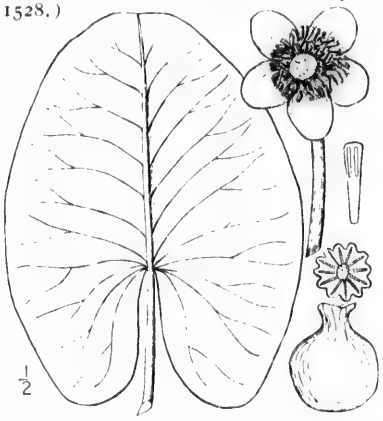
In ponds and slow streams, New Brunswick and Nova Scotia to the Rocky Mountains, south to Florida, Texas and Utah. April–Sept. Rev. Thos. Morong (Bot. Gaz. 11: 167) describes a var. (?) *minor* of *Nuphar advena* having smaller flowers, the margins of the stigmatic disc more crenate, rays 10, and fruit only 1′ long. Called also Cow-lily and Spatter-dock.

2. Nymphaea rubrodisca (Morong) Greene. Red-disked Pond Lily. (Fig. 1528.)

Nuphar rubrodiscum Morong, Bot. Gaz. **11**: 167. 1886.
Nymphaea rubrodisca Greene, Bull. Torr. Club, **15**: 84. 1888.
Nymphaea Fletcheri Lawson, Trans. Roy. Soc. Canada, **6**: sec. IV. 119. 1888.

Floating leaves 3′–10′ long, 2′–6′ wide, the sinus open or closed, sometimes pubescent beneath; submerged leaves generally present, membranous, orbicular; flowers 1′–1½′ broad, yellow; sepals 5 or 6; petals dilated upward, or obovoid, 3″–4″ long, less fleshy than those of the last; anther nearly the length of the filament; stigmatic disk crenate, bright red or crimson, 9–12-rayed; stamens in about 5 rows; fruit about 1′ long, contracted into a neck below the disk, 1′ thick.

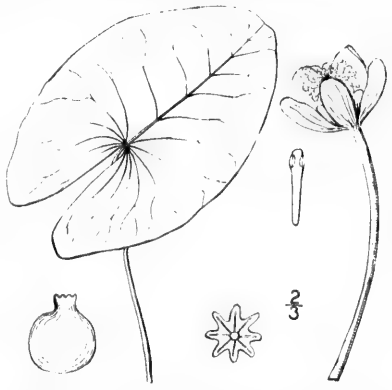
In ponds and slow streams, Lake Champlain, Ottawa, Ont., Adirondack Lakes of New York, to southeastern Pennsylvania and Michigan. May–Sept.



3. Nymphaea Kalmiàna (Michx.) Sims. Small Yellow Pond Lily. (Fig. 1529.)

Nymphaea lutea var. *Kalmiana* Michx. Fl. Bor. Am. **1**: 311. 1803.
Nymphaea microphylla Pers. Syn. **2**: 63. 1807.
Nuphar Kalmianum R. Br. in Ait. Hort. Kew, Ed. 2, **3**: 295. 1811.
N. Kalmiana Sims, Bot. Mag. *pl. 1243*. 1809.

Leaves 2′–4′ long, 1′–3′ broad, the sinus open or closed, commonly more or less pubescent beneath; submerged ones always present, membranous, orbicular, larger; flowers 1′ in diameter or less, yellow; sepals 5; petals thin and delicate, 2″ long; stamens in 3 or 4 rows, narrowly linear, the anther one-fourth the length of the filament; stigmatic disk crenate or stellate, 2″–3″ broad, 6–7-rayed, dark red; fruit ovoid, 6″–7″ long, with a short neck.



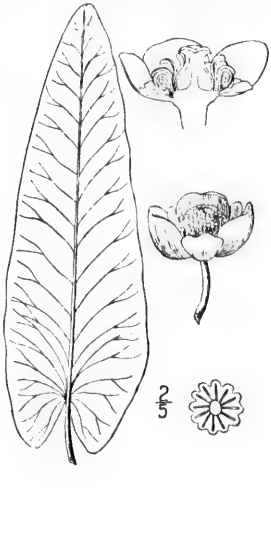
In ponds and slow streams, Newfoundland to southern New York and Pennsylvania, west to the Saskatchewan and Minnesota. Summer, flowering later than the others.

4. Nymphaea sagittaefòlia Walt. Arrow-leaved Pond Lily. (Fig. 1530.)

Nymphaea sagittaefolia Walt. Fl. Car. 155. 1788.
Nuphar sagittaefolia Pursh, Fl. Am. Sept. 370. 1814.

Floating leaves narrowly ovate or ovate-lanceolate, glabrous, obtuse, 8′–15′ long, 2′–3′ wide; submerged ones numerous, similar, but membranous and commonly larger; flowers yellow, about 1′ broad; sepals 5; petals broadened above, 3″ long; stamens in 4 or 5 rows, the filaments about equalling the anthers; stigmatic disk crenate, 11–15-rayed; fruit ovoid, not constricted into a neck, about 1′ long.

In ponds, southern Indiana and Illinois, and in the Atlantic States from North Carolina to Florida. Summer.



4. CASTÀLIA Salisb. in Konig & Sims, Ann. Bot. 2: 71. 1805.

Aquatic herbs, with horizontal perennial rootstocks, floating leaves and showy flowers. Sepals 4. Petals ∞, imbricated in many rows, inserted on the ovary, gradually passing into stamens; stamens ∞, the exterior with large petaloid filaments and short anthers, the interior with linear filaments and elongated anthers. Carpels ∞, united into a compound pistil with radiating linear projecting stigmas. Fruit globose, covered with the bases of the petals, ripening under water. [A spring of Parnassus.]

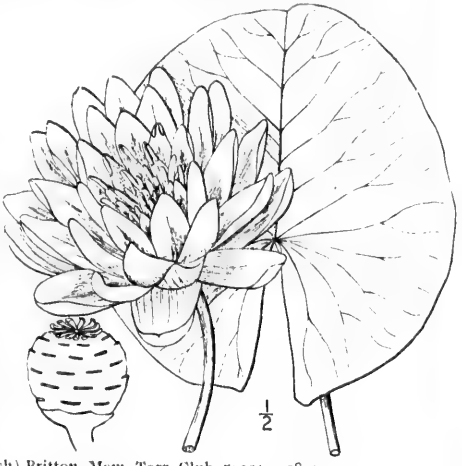
About 25 species, of wide geographic distribution.

Flowers 3′–5½′ broad, fragrant; leaves orbicular, purplish beneath. 1. *C. odorata.*
Flowers 4′–9′ broad, not fragrant; leaves orbicular, green both sides. 2. *C. tuberosa.*
Flowers 1′–1½′ broad, not fragrant; leaves oval. 3. *C. tetragona.*

1. Castalia odoràta (Dryand.) Woodv. & Wood. Sweet-scented White Water Lily. Pond Lily. Water Nymph. Water Cabbage. (Fig. 1531.)

Nymphaea odorata Dryand. in Ait. Hort. Kew. 2: 227. 1789.
Castalia pudica Salisb. in Konig & Sims, Ann. Bot. 2: 72. 1805.
Castalia odorata Woodv. & Wood in Rees' Cyclop. 6: no. 1. 1866.
Nymphaea odorata var. *minor* Sims, Bot. Mag. *pl. 1652.* 1814.

Rootstock thick, simple or with few branches. Leaves floating, orbicular or nearly so, 4′–12′ in diameter, glabrous, green and shining above, purple and more or less pubescent beneath, cordate-cleft or reniform, the sinus open but sometimes narrow; petioles and peduncles slender, with 4 main air-channels; flowers white, or tinged with pink, 3′–5½′ broad, deliciously fragrant; petals numerous, in many rows, narrowly oblong, obtuse; fruit globose, or slightly depressed; seeds stipitate, oblong, shorter than the aril.



In ponds and slow streams, Nova Scotia to Manitoba, south to Florida and Louisiana. June–Sept.

Castalia odoràta rósea (Pursh) Britton, Mem. Torr. Club, 5: 154. 1894.
Nymphaea odorata var. *rosea* Pursh, Fl. Am. Sept. 369. 1814.
Flowers large, deep pink or red. Eastern Massachusetts to New Jersey, near the coast.

2. Castalia tuberòsa (Paine) Greene. Tuberous White Water Lily. (Fig. 1532.)

Nymphaea tuberosa Paine, Cat. Pl. Oneida Co., N. Y. 132. 1865.
Castalia tuberosa Greene, Bull. Torr. Club, 15: 84. 1888.

Rootstock thick, with numerous lateral tuberous-thickened branches, which become detached and propagate the plant. Leaves orbicular, 5′–12′ in diameter, floating, sometimes slightly pubescent beneath, green both sides, the veins very prominent on the lower surface; sinus open or closed; petioles stout; flowers pure white, 4′–9′ broad, inodorous or very slightly scented; petals oblong, in many rows, broader than those of *C. odorata*, obtuse; fruit depressed-globose; seeds globose-ovoid, sessile, longer than or about equalling the aril.

Lake Champlain, west through the Great Lakes to Michigan, south to Trenton, N. J., Meadville, Pa., and eastern Nebraska. Summer. *Nymphaea reniformis* Walt. of the southern Atlantic States is clearly a different species.

3. Castalia tetragòna (Georgi) Lawson. Small White Water Lily. (Fig. 1533.)

Nymphaea tetragona Georgi, Reise in Russ. Reichs, **1**: 220. 1775.
Castalia pygmaea Salisb. Parad. Lond. *pl. 68.* 1807.
C. Leibergii Morong, Bot. Gaz. **13**: 134. 1888.
Castalia tetragona Lawson, Trans. Roy. Soc. Canada, **6**: Sec. IV. 112. 1888.

Leaves floating, oval or oblong, 2′–4′ long, 1½′–3′ wide, green above, green or purplish beneath, the basal lobes acute or rounded; sinus open, narrow; petioles and peduncles nearly or quite glabrous; flowers white, inodorous, 1′–2′ broad; petals in about 2 rows, faintly striped with purple, obtuse or acutish, oblong or obovate, thin, about the length of the sepals.

In the Misinaibi River, Ontario (R. Bell); in ponds along the Severn River, Keewatin (J. M. Macoun); near Granite Station, northern Idaho (Leiberg). Also in Siberia, Japan and the Himalayas. Summer.

5. NELÚMBO Adans. Fam. Pl. **2**: 76. 1763.

Large aquatic herbs, with thick rootstocks, long-petioled concave emersed or floating leaves, and small and scale-like submerged ones borne sessile on the rootstock. Flowers large, showy, yellow, pink or white. Sepals 4 or 5, imbricate. Petals and stamens ∞, inserted on the calyx, caducous. Filaments more or less petaloid; anthers introrse. Carpels ∞, distinct, contained in pits in the large convex receptacle. Style short; ovules 1 or 2, pendulous or anatropous; endosperm none; cotyledons thick, fleshy. Nuts globose or oblong. [Ceylon name for *N. Nelumbo.*]

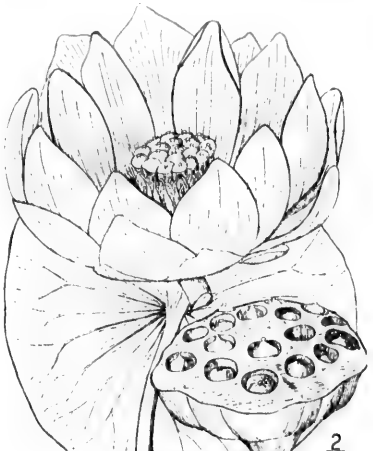
A genus of 2 species, one North American, the other Asiatic and Australasian, known as Water-bean.

Flowers pale yellow; plant native. 1. *N. lutea.*
Flowers pink or white; plant introduced. 2. *N. Nelumbo.*

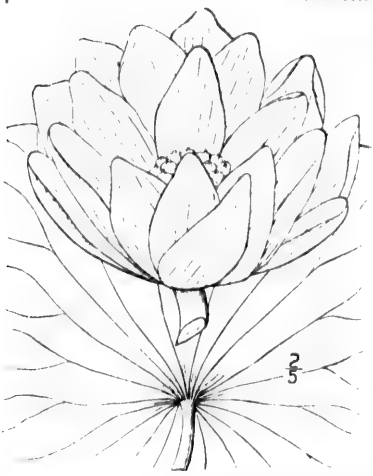
1. Nelumbo lùtea (Willd.) Pers. American Nelumbo or Lotus. (Fig. 1534.)

Nelumbium luteum Willd. Sp. Pl. **2**: 1259. 1799.
Nelumbo lutea Pers. Syn. **1**: 92. 1805.

Rootstock nearly horizontal, tuberiferous. Emersed leaves 1°–2° broad, nearly orbicular but often somewhat constricted in the middle, centrally peltate, raised high out of water or floating, prominently ribbed, glabrous above, more or less pubescent and lepidote beneath, the lower surface marked with an oblong, transverse area; petioles and peduncles thick, 3°–7° long, with several large air-canals; flowers pale yellow, 4′–10′ broad; petals concave, obovate, obtuse; anthers appendaged; fruit obconic or somewhat hemispheric, 3′–4′ long; seeds nearly globular, 6″ in diameter.



Grand River, near Dunnville, Ont.; Sodus Bay, Lake Ontario; in the Connecticut River near Lyme; Swartswood Lake, northern New Jersey; ponds at Woodstown and Sharptown, southern New Jersey; formerly in the Delaware River below Philadelphia, and locally south to Florida, west to Michigan, the Indian Territory and Louisiana. Tubers and seeds farinaceous, edible. Called also Great Water Lily, and Water Chinkapin, or Wankapin. July–Aug.



2. Nelumbo Nelúmbo (L.) Karst. Indian Lotus. (Fig. 1535.)

Nymphaea Nelumbo L. Sp. Pl. 511. 1753.
Nelumbo nucifera Gaertn. Fruct. & Sem. 1: 73. *pl. 19.* 1788.
Nelumbium speciosum Willd. Sp. Pl. 2: 1258. 1799.
Nelumbo Nelumbo Karst. Deutsch. Fl. 553. 1880–83.

Leaves 2°–3° in diameter, high exserted above the water or some of them floating, thin, concave, glaucous; petioles and peduncles 3°–6° long, glabrous or with scattered minute prickles; flowers 4′–10′ broad, pink or sometimes white; petals oblong or elliptic, obtuse; fruit obconic, 4′–5′ long, 3′–4′ in diameter; seeds oblong or ovoid.

Naturalized in ponds about Bordentown, N. J., where it was introduced by Mr. E. D. Sturtevant. Native of India, Persia, China, Japan and Australia. A superb plant, often cultivated. July–Aug.

Family 23. **CERATOPHYLLÀCEAE** A. Gray, Ann. Lyc. N. Y. 4: 41. 1837.

Hornwort Family.

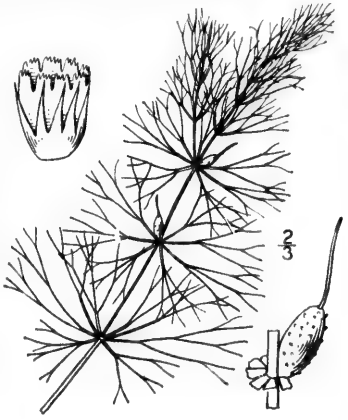
Submerged aquatics, with slender widely branching stems, and verticillate leaves, the monoecious or dioecious flowers solitary and sessile in the axils. Perianth many-parted, the segments entire or toothed. Stamens numerous, crowded on a flat or convex receptacle; anthers sessile or nearly so, linear-oblong, extrorse, the connective prolonged into a thick appendage beyond the sacs. Pistillate flowers with a superior 1-celled ovary; ovule 1, orthotropous, pendulous; style filiform, stigmatic at the summit. Fruit an indehiscent nut or achene. Endosperm none; embryo composed of 4 verticillate cotyledons, with a short hypocotyl and a plumule of several nodes and leaves.

The family contains only the following genus.

1. CERATOPHÝLLUM L. Sp. Pl. 992. 1753.

Leaves crowded in verticils, linear or filiform, spinulose-serrulate, forked. Sterile flowers with 10–20 stamens, the anthers about as long as the perianth. Fertile and sterile flowers generally at different nodes, but sometimes in opposite axils at the same node. Ovary and fruit somewhat longer than the perianth, the fruit beaked with the long persistent style.

One or possibly two species, widely distributed in fresh water.



1. Ceratophyllum demérsum L. Hornwort. (Fig. 1536.)

Ceratophyllum demersum L. Sp. Pl. 992. 1753.

Stems 2°–8° long, according to the depth of water. Leaves in verticils of 5's–12's, linear, 2–3 times forked, the end of the segments capillary and rigid, 4″–12″ long; ripe fruit oval, 2″–3″ long with a straight or curved spine-like beak 2″–4″ long, smooth and spurless or with a long basal spur on each side, or tuberculate and with narrowly winged spiny margins or broadly winged without spines.

In ponds and slow streams, throughout North America except the extreme north. Several species and varieties have been proposed, based on the spurs, spines or wings of the fruit, but none of them seem to be of any value. June–July.

Family 24. **MAGNOLIÀCEAE** J. St. Hil. Expos. Fam. 2: 74. 1805.

MAGNOLIA FAMILY.

Trees or shrubs, with alternate entire or rarely lobed leaves, large solitary flowers, and bitter aromatic bark. Sepals and petals arranged in 3's, hypogynous, deciduous. Stamens ∞; anthers adnate. Carpels ∞, separate or coherent, borne on the surface of the elongated receptacle, ripening into an aggregate fruit composed of 1–2-seeded dry or fleshy follicles or achenes.

About 10 genera and 70 species, of wide geographic distribution.

Anthers introrse; leaves entire, or with 2 basal lobes. 1. *Magnolia.*
Anthers extrorse; leaves lobed or truncate. 2. *Liriodendron.*

1. **MAGNÒLIA** L. Sp. Pl. 535. 1753.

Trees or shrubs. Leaves large and generally thick, entire. Buds covered with conduplicate sheathing stipules. Flowers large, fragrant. Sepals 3, petaloid. Petals 6–12, imbricated in 2–4 series. Anthers linear, introrse. Carpels spiked or capitate on the elevated or elongated receptacle, 2-ovuled, forming follicles at maturity. Seeds fleshy, suspended from the ripe cones by slender filamentous threads. [In honor of Pierre Magnol, 1638–1715, Professor of Botany in Montpellier.]

A genus of about 15 species, natives of eastern North America, eastern Asia and the Himalayas.

Leaves auriculate, glabrous. 1. *M. Fraseri.*
Leaves cordate, white-pubescent beneath. 2. *M. macrophylla.*
Leaves acute at base.
  Leaves 8′–20′ long, light green and somewhat pubescent beneath. 3. *M. tripetala.*
  Leaves 3′–6′ long, glaucous beneath. 4. *M. Virginiana.*
Leaves rounded or truncate at the base, thin. 5. *M. acuminata.*

1. Magnolia Fràseri Walt. Fraser's Magnolia. Long- or Ear-leaved Umbrella-tree. (Fig. 1537.)

Magnolia Fraseri Walt. Fl. Car. 159. 1788.
Magnolia auriculata Lam. Encycl. 3: 673. 1789.

A tree 25°–50° high, the trunk 5′–18′ in diameter, straight, the branches widely spreading. Leaf-buds glabrous; leaves clustered at the ends of the branches, auriculate, 6′–15′ long, 3′–8′ broad, elongated-obovate or oblong, contracted below, glabrous, the lower surface light green, the upper surface darker; petioles slender, 1′–3′ long; flowers white, 3′–8′ broad; petals spatulate or obovate, obtuse, much longer than the sepals; cone of fruit 3′–4′ long, rose-colored when mature.

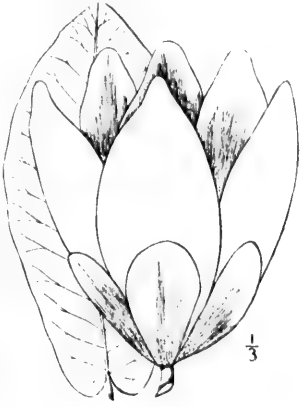
In mountain woods, Virginia and Kentucky to Florida and Mississippi. Heart-wood soft, brown; sap-wood white. Weight per cubic foot 31 lbs. May–June.

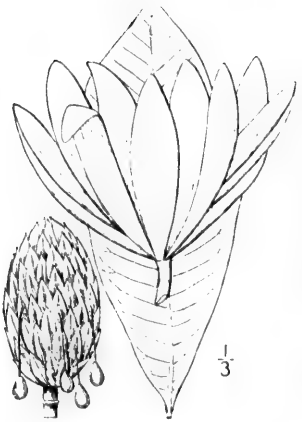
2. Magnolia macrophýlla Michx. Great-leaved Magnolia. Large-leaved Umbrella-tree, or Cucumber-tree. (Fig. 1538.)

Magnolia macrophylla Michx. Fl. Bor. Am. 1: 327. 1803.

A tree 20°–60° high, the trunk 6′–20′ in diameter, bark gray. Leaf-buds silky-pubescent; leaves oblong or obovate, blunt, cordate, 1°–3½° long, 8′–14′ broad, glabrous and green above, glaucous-white and pubescent beneath; petioles stout, 2′–4′ long; flowers 8″–15′ in diameter, white with a large purple centre; petals ovate-oblong, obtuse, thrice the length of the rounded sepals; cone of fruit ovoid-cylindric, 4′–6′ long, bright rose-colored at maturity.

In woods, southeastern Kentucky to Florida, west to Arkansas and Louisiana. Heart-wood brown, satiny, hard; sap-wood light yellow; weight per cubic foot 33 lbs. May–June.





3. Magnolia tripétala L. Umbrella-tree. Elk-wood. (Fig. 1539.)

Magnolia tripetala L. Sp. Pl. Ed. 2, 756. 1763.
Magnolia Virginiana var. *tripetala* L. Sp. Pl. 536. 1753.
Magnolia umbrella Lam. Encycl. **3**: 673. 1789.

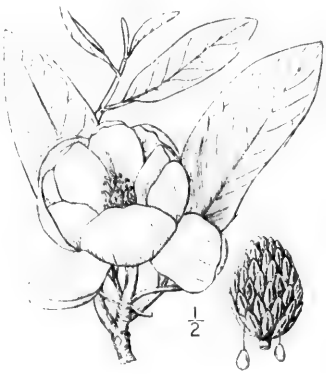
A tree 20°–40° high, trunk 4′–18′ in diameter. Leaf-buds glabrous; leaves clustered at the summits of the flowering branches, 1°–1½° long, 4′–8′ wide, obovate, acute, cuneate at the base, dark green and glabrous above, light green and more or less pubescent beneath; petioles stout, 1′–3′ long; flowers 8′–10′ in diameter, white, slightly odorous; sepals broad, reflexed, early deciduous; petals oblong-lanceolate or obovate-lanceolate, acutish; cone of fruit 4′–6′ long, rose-colored when mature.

In woods, southeastern Pennsylvania to Alabama, west to Arkansas and Mississippi. Heart-wood brown, soft; sap-wood white; weight per cubic foot 28 lbs. The name *tripetala* is in allusion to the 3 petaloid sepals. May.

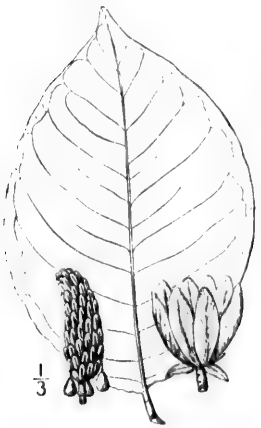
4. Magnolia Virginiana L. Laurel Magnolia. Sweet Bay. (Fig. 1540.)

M. Virginiana and var. *glauca* L. Sp. Pl. 535. 1753.
Magnolia glauca L. Sp. Pl. Ed. 2, 755. 1763.

A tree 15°–70° high, trunk 5′–3½° in diameter. Leaf-buds pubescent; leaves scattered along the flowering branches, 3′–6′ long, 1′–2′ broad, oval or oblong, obtuse or blunt-acuminate, acute at the base, coriaceous, dark green above, glaucous and more or less pubescent beneath; petioles about 1′ long; flowers white, depressed-globose, deliciously fragrant, 2′–3′ in diameter; sepals spreading, obtuse, nearly as large as the obovate rounded petals; cone of fruit oblong, 1½′–2′ high, pink.



In swamps and swampy woods, eastern Massachusetts, Long Island, Lebanon County, Pa., and southward, mainly east of the Alleghanies to Florida, west through the Gulf States to Arkansas and Texas. Heart-wood soft, reddish-brown; sap-wood nearly white; weight 31 lbs. Also called White Bay, Swamp Laurel, Swamp Sassafras and Beaver-tree. May–June.



5. Magnolia acuminàta L. Cucumber-tree. Mountain Magnolia. (Fig. 1541.)

Magnolia Virginiana var. *acuminata* L. Sp. Pl. 536. 1753.
Magnolia acuminata L. Sp. Pl. Ed. 2, 756. 1763.

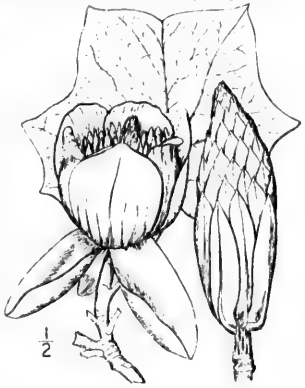
A tree 60°–90° high, trunk 20′–50′ in diameter. Leaf-buds silky-pubescent; leaves scattered along the branches, 6′–10′ long, 3′–4′ wide, thin, oval, acute or somewhat acuminate, rounded or truncate at the base, light green and more or less pubescent on the lower surface, especially along the veins; petioles 1′–1½′ long; flowers oblong-campanulate, greenish-yellow, 2′ high; petals obovate or oblong, much longer than the spreading deciduous sepals; cone of fruit cylindric, 3′–4′ long, about 1′ in diameter, rose-colored when mature.

In woods, southern New York to Illinois, south to Kentucky, western North Carolina and Alabama, west to Arkansas. Heart-wood soft, yellowish-brown; sap-wood lighter. Weight per cubic foot 29 lbs. Ascends to 4200 feet in Virginia. May–June.

2. LIRIODÉNDRON L. Sp. Pl. 535. 1753.

A large forest tree. Leaves alternate, truncate or broadly emarginate, 4-6-lobed or rarely entire, recurved on the petiole in the laterally compressed obtuse buds. Stipules united at the base. Flowers large, slightly fragrant. Sepals 3, petaloid, reflexed. Petals 6, connivent. Anthers linear, extrorse. Carpels spiked on the elongated receptacle, 2-ovuled, samaroid, 1-2-seeded; seeds pendulous by a short slender funiculus at maturity. [Greek, a tree bearing lilies.]

One or possibly two species, natives of eastern North America and China.



1. Liriodendron Tulipifera L. Tulip-tree. White-wood. (Fig. 1542.)

Liriodendron Tulipifera L. Sp. Pl. 535. 1753.

A magnificent tree 60°–190° high with diverging curved branches, the trunk 4°–12° in diameter. Leaves glabrous, very broadly ovate or nearly orbicular in outline, truncate or broadly notched at the apex, truncate, rounded or cordate at the base, 3′–6′ long with 2 apical and 2–4 basal lobes with rounded sinuses, or occasionally entire; flowers about 2′ high, erect, greenish-yellow, orange-colored within; petals obovate, obtuse, about equalling the reflexed sepals; cone of fruit dry, oblong, acute, 3′ long.

In woods, Vermont and Rhode Island to Florida, west to Michigan and Arkansas. May-June. Wood soft, yellowish or brownish; sap-wood nearly white. Weight per cubic foot 26 lbs. Called also Yellow Poplar.

Family 25. ANONÀCEAE DC. Syst. 1: 463. 1818.

CUSTARD-APPLE FAMILY.

Trees or shrubs, generally aromatic, with alternate entire leaves. Stipules none. Sepals 3 (rarely 2), valvate or rarely imbricate. Petals about 6, arranged in 2 series. Stamens ∞; anthers adnate, extrorse. Carpels ∞, separate or coherent, mainly fleshy in fruit. Seeds large, anatropous; embryo minute; endosperm copious, wrinkled.

About 46 genera and 550 species, mostly in the tropics, a few in the temperate zones.

1. ASÍMINA Adans. Fam. Pl. 2: 365. 1763.

Small trees, or shrubs, with alternate leaves and lateral or axillary nodding flowers. Buds naked. Sepals 3, ovate, valvate. Petals 6, arranged in 2 series, imbricated in the bud, those of the outer series the larger when mature. Receptacle subglobose. Stamens and carpels 3–15. Style oblong, stigmatic along the inner side; ovules numerous, in 2 rows. Fruit, large fleshy oblong berries. Seeds large, flat, horizontally placed, enclosed in fleshy arils. [From the aboriginal name *Assimin.*]

A genus of about 7 species, natives of eastern and southeastern North America.

1. Asimina triloba (L.) Dunal. North American Papaw. (Fig. 1543.)

Annona triloba L. Sp. Pl. 537. 1753.
Asimina triloba Dunal, Mon. Anon. 83. 1817.

A tree 10°–45° high, the trunk 5′–10′ in diameter. Shoots and young leaves dark-pubescent, becoming glabrous at maturity; leaves obovate, acute, 6′–12′ long, cuneate or rounded at the base; petioles 4″–6″ long; flowers axillary, on shoots of the preceding year, appearing with the leaves, 1′–1½′ in diameter, dark purple; sepals ovate, 4″–6″ long, densely dark-pubescent, as are the short peduncles; outer petals spreading, nearly orbicular, slightly exceeding the ovate inner ones; stamens numerous, short; fruit a fleshy berry, 3′–7′ long, 1′–2′ thick, sweet and edible when ripe, pendulous, several together on a thick peduncle.

Along streams, southwestern Ontario and western New York, Pennsylvania and western New Jersey to Michigan, south to Florida and Texas. March-April, the fruit mature in October. Wood light, soft, weak, greenish-yellow. Weight per cubic foot 24 lbs.

Family 26. **RANUNCULÀCEAE** Juss. Gen. 231. 1789.

CROWFOOT FAMILY.

Annual or perennial herbs, or rarely climbing shrubs, with acrid sap. Leaves alternate (except in *Clematis*), simple or compound. Stipules none, but the base of the petiole often clasping or sheathing. Pubescence, when present, composed of simple hairs. Sepals 3–15, generally caducous, often petal-like, imbricate, except in *Clematis*. Petals about the same number (occasionally more), or wanting. Flowers regular or irregular. Stamens ∞, hypogynous, their anthers innate. Carpels ∞ or rarely solitary, 1-celled, 1–many-ovuled. Ovules anatropous. Fruit achenes, follicles or berries. Seeds with endosperm.

About 35 genera and 1050 species, distributed throughout the world, not abundant in the tropics.

* **Carpels several-ovuled (1-2-ovuled in nos. 1 and 8); fruit a follicle or berry.**

Flowers regular; leaves palmately nerved or palmately compound.
- Petals wanting. Carpels ripening into a head of red berries. — 1. *Hydrastis.*
- Carpels ripening into a head of dry follicles. — 2. *Caltha.*
- Petals present, narrow or small, linear, flat. — 3. *Trollius.*
- Petals present, narrow or small, tubular, at least at the base.
  - Sepals persistent; stem tall, leafy. — 4. *Helleborus.*
  - Sepals deciduous; stem scape-like, bearing one leaf. — 5. *Eranthis.*

Flowers regular; leaves ternately or pinnately compound or decompound.
- Petals not spurred.
  - Low herbs with solitary or panicled flowers.
    - Carpels and follicles stalked. — 6. *Coptis.*
    - Carpels and follicles sessile. — 7. *Isopyrum.*
  - Low shrub with racemose flowers. — 8. *Xanthorrhiza.*
  - Tall erect herbs with racemose flowers.
    - Fruit berries. — 9. *Actaea.*
    - Fruit follicles. — 10. *Cimicifuga.*
- Petals prolonged backward into hollow spurs. — 11. *Aquilegia.*

Flowers irregular. Posterior sepal spurred. — 12. *Delphinium.*
Posterior sepal hooded, helmet-like. — 13. *Aconitum.*

** **Carpels 1-ovuled; fruit an achene.**

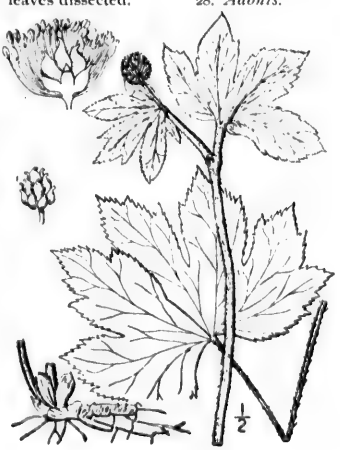
Flowers subtended by involucres remote from the calyx or close under it.
- Styles short, glabrous or pubescent, or none.
  - Involucre remote from the calyx; styles short, subulate. — 14. *Anemone.*
  - Involucre of 3 simple sessile leaves close under the flower. — 15. *Hepatica.*
  - Involucre of 3 compound sessile leaves; leaflets stalked; stigma sessile. — 16. *Syndesmon.*
- Styles elongated, densely plumose. — 17. *Pulsatilla.*

Flowers not subtended by involucres.
- Leaves opposite. Sepals petal-like. Petals wanting. — 18. *Clematis.*
  Petals present, small, spatulate. — 19. *Atragene.*
- Leaves alternate or basal.
  - Small annual herbs; leaves basal, linear; sepals spurred. — 20. *Myosurus.*
  - Low or tall herbs, mostly with both basal and stem leaves; sepals spurless.
    - Petals none; leaves palmately lobed. — 21. *Trautvetteria.*
    - Petals present, bearing a nectariferous pit at the base of the blade.
      - Achenes compressed, smooth, papillose or spiny; flowers yellow. — 22. *Ranunculus.*
      - Achenes transversely wrinkled; flowers white. — 23. *Batrachium.*
      - Achenes swollen, smooth; sepals 3; petals mostly 8. — 24. *Ficaria.*
      - Achenes compressed or terete; longitudinally nerved.
        - Achenes terete; leaves pinnately compound. — 25. *Cyrtorhyncha.*
        - Achenes compressed; leaves crenate or lobed. — 26. *Oxygraphis.*
    - Petals none; leaves ternately decompound. — 27. *Thalictrum.*
    - Petals present, with no nectar-bearing pit; leaves dissected. — 28. *Adonis.*

1. **HYDRÁSTIS** Ellis; L. Syst. Ed. 10, 1088. 1759.

Erect perennial pubescent herbs, with palmately lobed reniform leaves, and small solitary greenish-white flowers. Sepals 3, petaloid, falling away at anthesis. Petals none. Stamens numerous. Carpels ∞, each bearing two ovules near the middle, and in fruit forming a head of 1–2-seeded crimson berries, somewhat resembling a raspberry. [Greek, water-acting, from its supposed drastic properties.]

Two known species, one of eastern North America, the other Japanese.



1. Hydrastis Canadénsis L. Orange-root. Golden Seal. (Fig. 1544.)

Hydrastis Canadensis L. Syst. Ed. 10, 1088. 1759.

Perennial from a thick yellow rootstock, erect, about 1° high. Basal leaf long-petioled,

reniform, 5′–8′ broad, palmately 5–9-lobed, the lobes broad, acute, sharply and unequally serrate; cauline leaves 2, borne at the summit of the stem, the upper one subtending the greenish-white flower, which is 4″–5″ broad when expanded; filaments widened, about 2″ long; anthers oblong, obtuse; head of fruit ovoid, blunt, about 8″ long, the fleshy carpels tipped with a short curved beak.

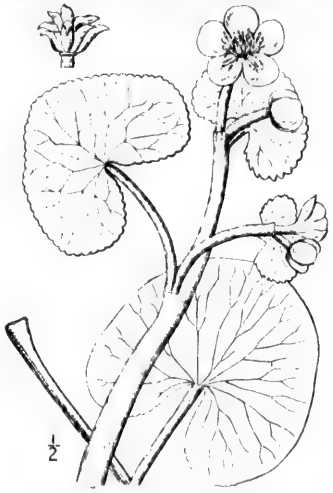
In woods, southern New York to Minnesota and western Ontario, south to Georgia and Missouri. Ascends to 2500 ft. in Virginia. April. Called also Yellow Puccoon, Yellow-root, Turmeric-root, Yellow Indian Paint.

2. CÁLTHA L. Sp. Pl. 558. 1753.

Succulent herbs, with simple entire or crenate mostly basal cordate or auriculate leaves Flowers yellow, white or pink. Sepals large, deciduous, petal-like. Petals none. Stamens numerous, obovoid. Carpels numerous or few, sessile, bearing ovules in 2 rows along the ventral suture, in fruit forming follicles. [Latin name of the Marigold.]

A genus of beautiful marsh plants, comprising about 10 species, distributed through the temperate and arctic regions of both hemispheres. In addition to those here described, three others are found on the western side of the continent.

Stems erect or ascending; flowers yellow.
Leaves cordate, generally with a narrow sinus; flowers 1′–1½′ wide. 1. *C. palustris.*
Leaves flabelliform with a broad sinus; flowers 6″–9″ wide. 2. *C. flabellifolia.*
Stems floating or creeping; flowers white or pink. 3. *C. natans.*

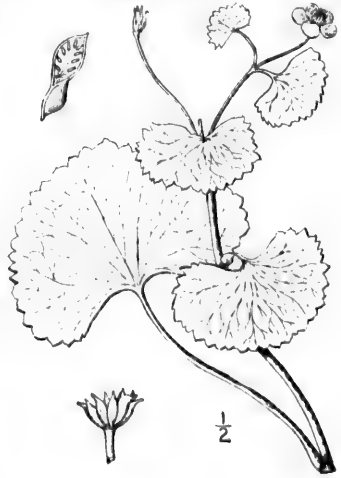


1. Caltha palústris L. Marsh-marigold. Meadow-gowan. (Fig. 1545.)

Caltha palustris L. Sp. Pl. 558. 1753.

Stout, glabrous, stem hollow, erect or ascending, 1°–2° high, branching and bearing several flowers. Basal leaves on long and broad petioles, cordate or reniform, 2′–7′ wide, with a narrow sinus, entire, crenate or dentate, the upper shorter-petioled or sessile, with nearly truncate bases; flowers bright yellow, 1′–1½′ broad; sepals oval, obtuse; follicles 3–12 or even more, compressed, 5″–6″ long, slightly curved outward, many-seeded.

In swamps and meadows, Newfoundland to South Carolina, west through British America to the Rocky Mountains and to Iowa. Ascends to 2500 ft. in Virginia. Locally called Cowslip and used as a spring vegetable. April-June. Old English names, Water Dragon, Water- or Horse-blob, May-blob.



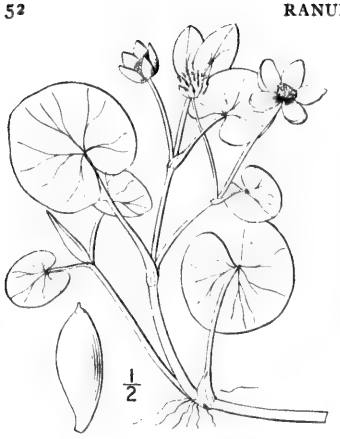
2. Caltha flabellifòlia Pursh. Mountain Marsh-marigold. (Fig. 1546.)

Caltha flabellifolia Pursh, Fl. Am. Sept. 390. 1814.

Caltha palustris var. *flabellifolia* T. & G. Fl. N. A. 1: 27. 1838.

Weak, slender, reclining or ascending, 1°–1½° long, glabrous. Basal leaves 2′–4′ broad, long-petioled, flabelliform or reniform, with a wide open sinus; the upper sessile or short-petioled, similar or with truncate bases, all crenate or dentate; flowers yellow, 6″–9″ wide, solitary or 2–3 together; sepals oval; achenes 4–10, about 4″ long, compressed.

In cold shaded mountain springs, Pocono plateau of Pennsylvania and northern New Jersey to Maryland. Strikingly different from the former in habit and appearance. June–July.



3. **Caltha nàtans** Pall. Floating Marsh-marigold. (Fig. 1547.)

Caltha natans Pall. Reise Russ. 3: 284. 1776.

Stems slender, floating or creeping in wet places, rooting at the nodes, 6′–18′ long, branching. Lower and basal leaves slender-petioled, cordate-reniform, 1′–2′ wide, crenate or entire, thin, cordate with a narrow sinus; upper leaves short-petioled, smaller; flowers white or pink, 6″–9″ broad; sepals oval, obtusish; follicles several or numerous, rather densely capitate, about 2″ long, the beak short and straight.

In pools and streams, Tower, Mich., Athabasca, arctic America and northern Asia. Summer.

3. TRÓLLIUS L. Sp. Pl. 556. 1753.

Erect or ascending perennial herbs, with palmately divided or lobed leaves, thickened fibrous roots, and large usually solitary yellowish or purplish flowers. Sepals 5–∞, petaloid, deciduous. Petals 5–∞, small, unguiculate, linear, with a nectariferous pit at the base of the blade. Carpels 5–∞, sessile, many-ovuled, forming a head of follicles in fruit. Stamens numerous. [Old German, *trol*, something round.]

About 10 species, mainly inhabiting marshy places, natives of the north temperate zone. Only the following one is North American, unless the Rocky Mountain plant proves to be distinct.

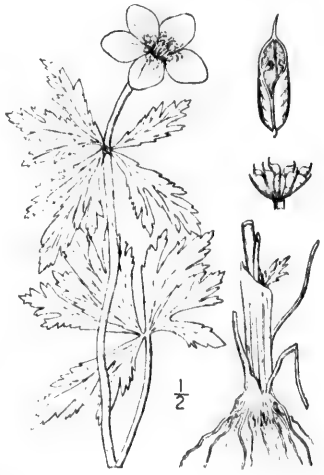
1. **Trollius láxus** Salisb. American Globe-flower. (Fig. 1548.)

Trollius Americanus Muhl. Trans. Amer. Phil. Soc. 3: 172, name only. 1791.

Trollius laxus Salisb. Trans. Linn. Soc. 8: 303. 1803.

Stems slender, weak, ascending, 1°–2° long. Leaves all but the upper petioled (the lower petioles sometimes a foot long), palmately 5–7-parted, 2′–4′ wide, the segments obovate, cuneate, lobed, cleft or toothed; flowers generally solitary, 1½′ broad; sepals 5–7, ovate or obovate, obtuse, spreading; petals 15–25, minute, much shorter than the numerous stamens; filaments filiform; anthers linear, 1″ long; head of fruit nearly an inch broad, the follicles 4″ long, each tipped with a straight subulate beak of one-fourth its length.

In swamps, New Hampshire to Delaware, west to Michigan. Also in the northern Rocky Mountains, where a white-flowered form (var. *albiflorus* A. Gray, Am. Journ. Sci. (II.) 31: 241) is found at high altitudes, and in Washington and British Columbia. May-July.



4. HELLÉBORUS L. Sp. Pl. 557. 1753.

Erect perennial herbs, with large palmately divided leaves, the basal long-petioled, the upper sessile and sometimes reduced to bracts. Flowers large, white, greenish or yellowish. Sepals 5, broad, petaloid, mainly persistent. Petals small, unguiculate, tubular. Stamens ∞. Carpels generally few, sessile, in fruit forming several-seeded capsules, which are dehiscent at the apex at maturity. [The classical name for *H. orientalis*; derivation unknown.]

A genus of coarse herbs, comprising about 10 species, natives of Europe and western Asia.

1. **Helleborus viridis** L. Green Hellebore. (Fig. 1549.)

Helleborus viridis L. Sp. Pl. 558. 1753.

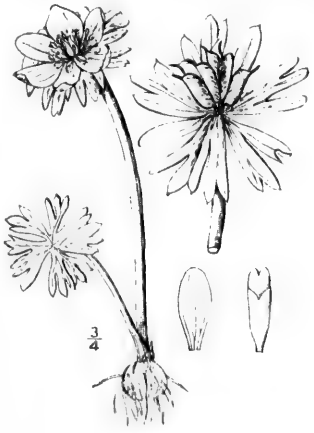
Stout, erect, 1°–2° high, glabrous. Basal leaves 8′–12′ broad, on petioles 6′–10′ long, palmately divided into 7–11 oblong acute sharply serrate segments 3′–4′ long; stem hardly exceeding the basal leaves, and bearing several sessile similar leaves near the top subtending the large drooping yellowish-green flowers; sepals broadly oblong, obtuse, spreading, about 1′ long; petals tubular, 2-lipped, 2″ long; stamens widened; anthers oblong, obtuse; pods 8″ long, tipped with a slender beak one-third their length or longer.

In waste places, locally adventive from Europe in New York, New Jersey, Pennsylvania and West Virginia. May.

5. ERÁNTHIS Salisb. Trans. Linn. Soc. 8: 303. 1803.

Low herbs, with perennial tuberiferous rootstocks. Basal leaves palmately dissected. Cauline leaf one, borne near the summit of the stem, sessile or amplexicaul, immediately subtending the large yellow flower. Sepals 5–8, narrow, petaloid, deciduous. Petals, small two-lipped nectaries. Stamens numerous. Carpels commonly few, stipitate, many-ovuled, in fruit forming a head of follicles. [Greek, flower of spring.]

A genus of about 5 species, natives of Europe and the mountains of Asia.



1. **Eranthis hyemàlis** (L.) Salisb. Winter Aconite or Hellebore. (Fig. 1550.)

Helleborus hyemalis L. Sp. Pl. 557. 1753.

Eranthis hyemalis Salisb. Trans. Linn. Soc. 8: 304. 1803.

Erect, simple, 5′–8′ high from a tuberous-thickened rootstock; roots fibrous. Basal leaves long-petioled, 1½′ broad, divided and cleft into numerous linear or oblong lobes; cauline leaf similar, involucrate, sessile, clasping; flower solitary, 1½′ wide, sessile; sepals 5–9, membranous, obovate, obtuse, occasionally lobed; petals several, clawed, 2-lipped; stamens numerous; filaments filiform; anthers oblong, obtuse; carpels several, stipitate; follicles compressed, 5″ long, tipped with a sharp beak.

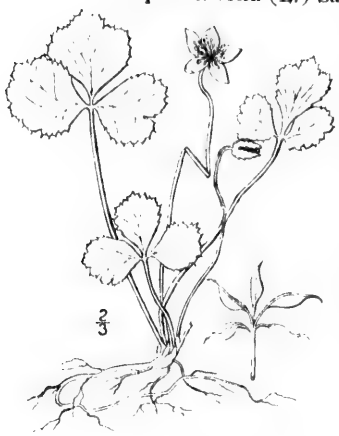
Naturalized from Europe at Bartram's Garden, Philadelphia, and at Media, Pa. February.

6. CÓPTIS Salisb. Trans. Linn. Soc. 8: 305. 1803.

Low herbs, with slender perennial rootstocks, basal compound or divided leaves, and scapose white flowers. Sepals 5–7, petaloid, deciduous; petals 5–6, small, linear, cucullate. Stamens numerous. Carpels stipitate, few, in fruit forming an umbel of follicles. [Name from the Greek, referring to the cut or divided leaves.]

A genus of about 9 species, inhabiting the cooler portions of the north temperate zone. In addition to the following, three others are found on the Pacific Coast of North America.

1. Coptis trifòlia (L.) Salisb. Gold-thread. (Fig. 1551.)



Helleborus trifolius L. Sp. Pl. Ed. 2, 784. 1762.
Coptis trifolia Salisb. Trans. Linn. Soc. **8**: 305. 1803.
Isopyrum trifolium Britton, Bull. Torr. Club, **18**: 265. 1891.

Tufted, glabrous, 3′–6′ high from a slender or filiform yellow bitter rootstock. Leaves all basal, long-petioled, the blade reniform, 1′–2′ broad, 3-divided; petioles very slender; segments broadly obovate, cuneate, obtuse, prominently veined, crenate or slightly lobed, dark green and shining above, paler beneath, the teeth mucronate; scape 1-flowered, slender; sepals oblong, obtuse; petals small, club-shaped; follicles 3–7, about 3″ long, borne on stipes of about their own length, spreading, tipped with a beak 1″–1½″ long.

In damp mossy woods, and bogs, Newfoundland to Maryland, west to Minnesota, British Columbia and Alaska. Leaves evergreen. Ascends to 3500 ft. in the Adirondacks. Called also Canker-root. May–Aug.

7. ISOPÝRUM L. Sp. Pl. 557. 1753.

Slender glabrous herbs, with ternately decompound leaves, and solitary or panicled white flowers. Sepals 5–9, petaloid, deciduous. Petals 5, nectariform or none. Stamens numerous. Carpels 2–20, sessile (stalked in a western species), several-ovuled, forming a head of follicles in fruit. [Old Greek name for some *Fumaria*.]

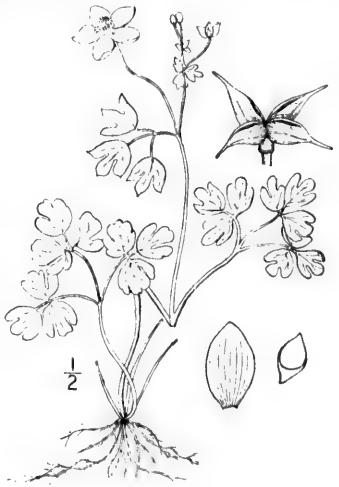
A genus of about 15 species, natives of the north temperate zone. Besides the following, there are 3 other North American species, natives of the Pacific Coast.

1. Isopyrum biternàtum (Raf.) T. & G. False Rue Anemone. (Fig. 1552.)

Enemion biternatum Raf. Journ. Phys. **91**: 70. 1820.
Isopyrum biternatum T. & G. Fl. N. A. **1**: 660. 1840.

Slender, erect, paniculately branching above; roots fibrous and sometimes tuberiferous. Basal leaves long-petioled, biternate, thin, the ultimate segments broadly obovate, obtuse, lobed or divided; upper ones similar but sessile or short-petioled; flowers several, terminal and axillary, white, 5″–9″ broad; sepals 5, oblong or somewhat obovate, obtuse; petals none; stamens many; filaments slender, thickened above; carpels few; follicles widely spreading, ovate, 2″ long, several-seeded, tipped with a beak nearly one-half their length.

In moist woods and thickets, Ontario to Minnesota, south to Florida and Texas. May.



8. XANTHORRHÌZA L'Her. Stirp. Nov. 79. 1784.

Low shrubby plants, with pinnate or bipinnate leaves, and small compoundly racemose flowers. Sepals 5, petaloid, deciduous. Petals 5, smaller than the sepals, unguiculate, concave, 2-lobed. Stamens 5 or 10. Carpels 5–10, sessile, 2-ovuled, forming 1-seeded follicles at maturity by the suppression of one of the ovules. [Greek, yellow root.]

A monotypic genus of eastern North America.

1. Xanthorrhiza apiifòlia L'Her. Shrub Yellow-root. (Fig. 1553.)

Xanthorrhiza apiifolia L'Her. Stirp. Nov. 79. 1784.
Xanthorrhiza simplicissima Marsh. Arb. Amer. 168. 1785.

Glabrate, 1°–2° high, the bark and long roots yellow and bitter. Leaves pinnate or sometimes bipinnate, clustered at the summit of the short stem, the blade 5′–6′ long, slender petioled; leaflets 5, thin, 1′–3′ long, incisely toothed, cleft or divided, sessile, ovate or oblong, acute, cuneate, shining; branches of the raceme or panicle slender, drooping, 2′–3′ long; flowers about 2″ broad, pedicelled, solitary or 2–3 together, brownish-purple; sepals ovate, acute; follicles 4–8, inflated, light yellow, 1-seeded, diverging, curved at the apex, minutely beaked.

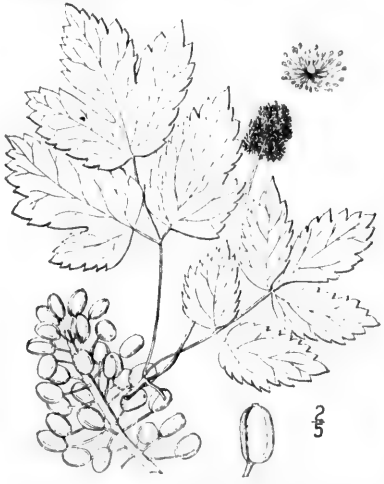
In woods, southwestern New York to Florida. Also called Yellow-wood. The lowest leaves are sometimes 3-foliolate. April–May.

9. ACTAÈA L. Sp. Pl. 504. 1753.

Erect perennial herbs, with large ternately compound leaves, and small white flowers in terminal racemes. Sepals 3–5, petaloid. Petals 4–10, small, spatulate or narrow, clawed. Stamens numerous. Ovary 1, many-ovuled, forming in fruit a large somewhat poisonous berry; stigma broad, sessile. [An ancient name of the elder.]

About 4 known species, natives of the north temperate zone. Besides the following another occurs in the western United States.

Pedicels slender; berries red. 1. *A. rubra.*
Pedicels stout; berries white. 2. *A. alba.*



1. Actaea rùbra (Ait.) Willd. Red Baneberry. (Fig. 1554.)

Actaea spicata var. *rubra* Ait. Hort, Kew. 2: 221. 1789.
Actaea rubra Willd. Enum. 561. 1809.

Erect, bushy, 1°–2° high, pubescent or glabrate. Leaves petioled, or the upper sessile, ternate, the divisions pinnate with the lower ultimate leaflets sometimes again compound; leaflets ovate or the terminal one obovate, toothed or somewhat cleft, the teeth mainly rounded or mucronate, or acutish; raceme ovoid; petals spatulate, shorter than the stamens; pedicels mainly slender, 5″–7″ long; berries red, oval, 5″–6″ long, many-seeded.

In woods, Nova Scotia to New Jersey and Pennsylvania, west to the Rocky Mountains. Most abundant northward. April–June. *A. spicata* L., of Europe, has purplish-black berries and has not been observed in America. This and the following species are called also Cohosh, Herb-Christopher, and Rattlesnake Herb.

Actaea rùbra argùta (Nutt.) Greene, Pitt. 2: 108. 1890.
Actaea arguta Nutt.; T. & G. Fl. N. A. 1: 35. 1838.
Plant larger, the leaflets more incised. Nebraska to British Columbia and California.

Actaea rùbra dissécta Britton.
Leaflets all deeply incised, the lower compound or decompound. Lincoln Co., Ontario.

2. Actaea álba (L.) Mill. White Baneberry. (Fig. 1555.)

Actaea spicata var. *alba* L. Sp. Pl. 504. 1753.

Actaea alba Mill. Gard. Dict. Ed. 8, no. 2. 1768.

Closely resembles the preceding species in habit and aspect. Leaflets generally more cut and the teeth and lobes acute or acuminate; raceme oblong; petals truncate at the apex; fruiting pedicels as thick as the peduncle and often red; berries short-oval, white, often purplish at the end.

In woods, Nova Scotia and Anticosti to Georgia, west to British Columbia and Missouri. Ascends to 5000 ft. in Virginia. April–June. Forms with white berries and slender pedicels and red berries on thickened pedicels are occasionally met with, and supposed by Watson and Coulter (Gray's Man. Ed. 6, 48) to be the result of hybridization. The white-berried species is said to bloom a week or two later than the red.

10. CIMICÍFUGA L. Amoen. Acad. 8: 193. 1774.

Tall erect perennial herbs, with large decompound leaves, and white racemose flowers. Sepals 2–5, petaloid, deciduous. Petals 1–8, small, clawed, 2-lobed or none. Carpels 1–8, many-ovuled, sessile or stipitate, forming follicles at maturity. Stigma broad or minute. [Latin, to drive away bugs.]

A genus of about 10 species, natives of North America, Asia and eastern Europe. Besides the following, there are 3 on the western side of the continent.

Carpels 1 or 2, sessile; seeds in 2 rows, smooth.
Leaflets ovate, oblong or obovate, narrowed, truncate or subcordate at the base. 1. *C. racemosa.*
Leaflets broadly ovate or suborbicular, deeply cordate. 2. *C. cordifolia.*
Carpels 2–3, stalked; seeds in 1 row, chaffy. 3. *C. Americana.*

1. Cimicifuga racemòsa (L.) Nutt. Black Snakeroot. Black Cohosh. (Fig. 1556.)

Actaea racemosa L. Sp. Pl. 504. 1753.

Cimicifuga racemosa Nutt. Gen. 2: 15. 1818.

Stem slender, 3°–8° high, leafy above. Leaves ternate, the divisions pinnate and the ultimate leaflets often again compound; leaflets ovate or oblong, or the terminal one obovate, acute or sometimes obtusish at the apex, narrowed, truncate or the lower subcordate at base, incisely-toothed, cleft or divided, thickish, nearly glabrous; racemes compound, terminal, 6′–2° long, usually finely pubescent; pedicels bracted; flowers 6″–7″ broad, foetid; petals 4–8, 2-cleft; stamens very numerous; pistils 1 or 2, sessile; stigma broad; follicles oval, 3″–4″ long, minutely beaked; seeds in 2 rows, smooth, flattened.

In woods, Maine and Ontario to Wisconsin, south to Georgia and Missouri. Ascends to 4000 ft. in North Carolina. June–Aug.

Cimicifuga racemòsa dissécta A. Gray, Man. Ed. 6, 47. 1890.
Leaves pinnately compound, the leaflets all incised. Southern Pennsylvania and Delaware.

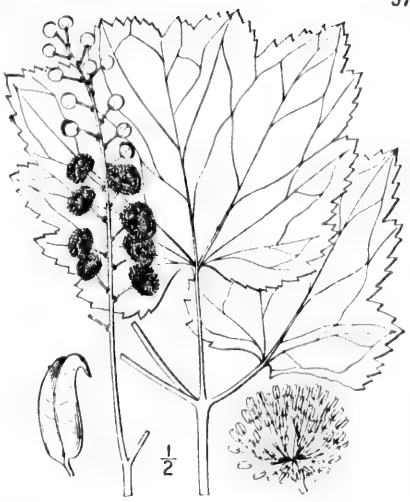
2. Cimicifuga cordifòlia Pursh. Heart-leaved Snakeroot. (Fig. 1557.)

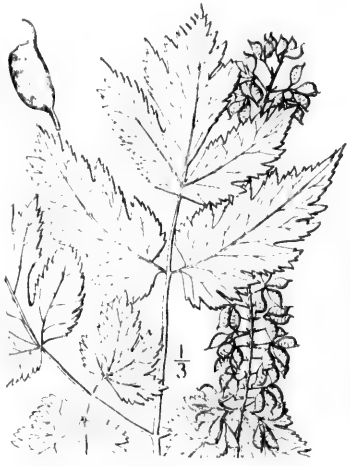
Cimicifuga cordifolia Pursh, Fl. Am. Sept. 373. 1814.

Cimicifuga racemosa var. *cordifolia* A. Gray, Syn. Fl. I: Part 1, 55. 1895.

Tall, similar to the preceding species and perhaps intergrading with it. Leaflets very broadly ovate or orbicular, acute, obtuse or acuminate at the apex, deeply cordate at the base, sometimes 6′ wide; pistil 1, sessile; follicles apparently very similar to those of *C. racemosa*. An imperfectly understood species, reported to flower later than *C. racemosa* where the two grow together.

In woods, southwestern Virginia to North Carolina and Tennessee. Tennessee specimens agree exactly with the figure of this plant given in Botanical Magazine, *pl. 2069*. June–July.





3. Cimicifuga Americàna Michx. American Bugbane. (Fig. 1558.)

Cimicifuga Americana Michx. Fl. Am. I: 316. 1803.

Stem slender, 3°–5° high, leafy. Leaves ternate, the divisions pinnate with many of the ultimate leaflets again compound; leaflets ovate or oblong, the terminal one generally cuneate, acute, thin, glabrate, all incisely toothed, cleft or divided, 1′–3′ long; racemes terminal, slender, compound, densely and finely pubescent 1°–2° long; flowers pedicelled, 4″–6″ broad; pedicels minutely bracted; petals few, 2-lobed; stamens numerous; pistils 3–8, stipitate, stigma minute; follicles inflated, membranous, 5″ long, narrowed below, tipped with a short oblique subulate beak; seeds in 1 row, flattened, chaffy.

Blair Co., Pa., south along the mountains to Georgia. Aug.–Sept.

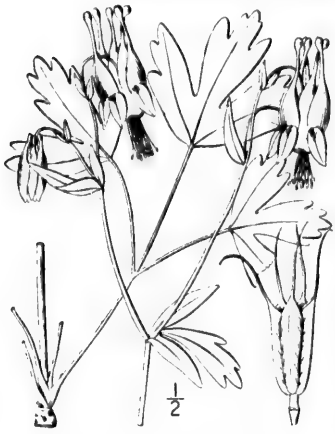
11. AQUILÈGIA L. Sp. Pl. 533. 1753.

Erect branching perennial herbs, with ternately decompound leaves, and large showy flowers. Sepals 5, regular, petaloid, deciduous. Petals concave, produced backward between the sepals into a hollow spur; stamens numerous, the inner ones reduced to staminodia. Carpels 5, sessile, many-ovuled, forming heads of follicles in fruit. [Latin, eagle, from the fancied resemblance of the spurs to the eagle's claws.]

A genus of beautiful plants, comprising about 15 species, distributed throughout the north temperate zone and extending into the mountains of Mexico. Besides the following, some 7 others occur in the western parts of North America.

Spur of petals nearly straight; flowers scarlet, white or yellow. 1. *A. Canadensis.*
Spur incurved; flowers blue or purple, about 9″ long. 2. *A. brevistyla.*
Spur strongly hooked; flowers white or purple, 1′–2′ long. 3. *A. vulgaris.*

1. **Aquilegia Canadénsis** L. Wild Columbine. (Fig. 1559.)



Aquilegia Canadensis L. Sp. Pl. 533. 1753.

Glabrous or somewhat pubescent, 1°–2° high, branching. Lower and basal leaves slender-petioled, biternate, 4′–6′ broad, the ultimate leaflets sessile or on very short stalks, obovate, obtuse, cuneate, obtusely lobed and toothed, pale beneath; leaves of the upper part of the stem lobed or divided; flowers nodding, 1′–2′ long, scarlet or rarely white, the spurs nearly straight, 6″ long, thickened at the end; stamens and styles long-exserted; head of fruit erect; follicles slightly spreading, about 8″ long, tipped with a filiform beak of about the same length.

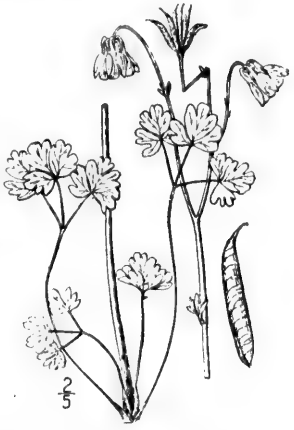
In rocky woods, Nova Scotia to the Northwest Territory, south to Florida and Texas. Ascends to 5000 ft. in Virginia. Also at high altitudes in the Rocky Mountains. April–July.

Aquilegia Canadénsis flaviflòra (Tenney) Britton, Bull. Torr. Club, 15: 97. 1888.

Aquilegia flaviflora Tenney, Am. Nat. 1: 389. 1867.

Flowers yellow; foliage lighter green than in the type. Massachusetts, New York and New Jersey. Rare.

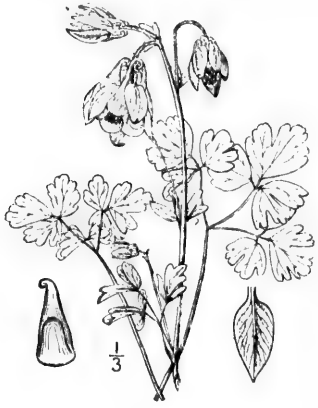
2. **Aquilegia brevistyla** Hook. Small-flowered Columbine. (Fig. 1560.)



Aquilegia brevistyla Hook. Fl. Bor. Am. 1: 24. 1829.

Slender, erect, sparingly pubescent, branching, 6′–18′ high. Basal leaves 2′–5′ broad, long-petioled, biternate, the ultimate leaflets nearly sessile, broadly obovate, lobed and crenate; leaves of the stem few, nearly sessile, lobed or divided; flowers small, nodding, about as broad as long (8″), blue or purple; spurs short, incurved, about 2″ long; stamens and short styles barely exserted; head of fruit erect; follicles slightly spreading, 8″ long, pubescent, tipped with a subulate beak about 2″ long.

Northwest Territory to South Dakota. June–July.



3. **Aquilegia vulgàris** L. European Columbine. (Fig. 1561.)

Aquilegia vulgaris L. Sp. Pl. 533. 1753.

Stout, erect, pubescent or nearly glabrous, 1°–2° high, branching above. Basal and lower leaves 4′–6′ broad, petioled, 2–3-ternate, the lateral divisions broadly obovate, obtuse, lobed and crenate, glaucous beneath, dark green above; the upper few, lobed or divided; flower 1½′–2′ broad and about as long, showy, blue, purple or white; spurs 3″–4″ long, stout, strongly hooked; sepals spreading; stamens and styles hardly exserted.

Escaped from gardens into woods and fields, frequent in the Eastern and Middle States, in Nova Scotia and New Brunswick. Adventive or naturalized from Europe. May–July.

12. DELPHÍNIUM L. Sp. Pl. 530. 1753.

Annual or perennial erect branching herbs, with racemose or paniculate showy flowers. Leaves palmately lobed or divided. Sepals 5, the posterior one prolonged into a spur. Petals 2 or 4, small, the two posterior ones spurred, the lateral, when present, small. Carpels few, sessile, many-ovuled, forming follicles at maturity. [Latin, from the supposed resemblance of the flowers to a dolphin.]

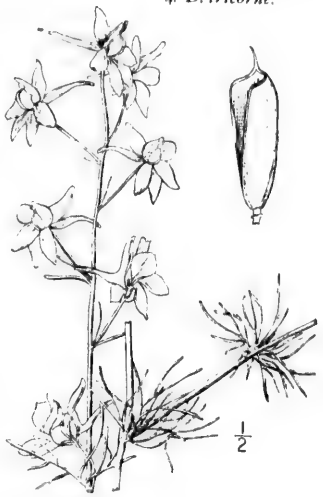
A genus of beautiful plants, with large irregular flowers, comprising some 60 species, natives of the north temperate zone. Besides the following, some 20 others in western North America and several in the mountains of Mexico.

Annual; pistil 1. 1. *D. Consolida.*
Perennials; pistils 3.
  Follicles erect.
    Raceme narrow, elongated; spur straight. 2. *D. urceolatum.*
    Raceme short; spur curved upward. 3. *D. Carolinianum.*
  Follicles widely spreading; raceme loose. 4. *D. tricorne.*

1. Delphinium Consólida L. Field Larkspur. Knight's-spur. Lark-heel. (Fig. 1562.)

Delphinium Consolida L. Sp. Pl. 530. 1753.

Erect, glabrous, or somewhat pubescent, 1–2½° high, divaricately branched. Leaves short-petioled or sessile, all divided into narrowly linear cleft or toothed segments; racemes terminal, rather loose, 6′–10′ long; flowers on short pedicels, blue or white, 1′–1½′ long; spur slender, bent near the middle; petals 2, united; carpel 1, forming an erect glabrous follicle in fruit, tipped with a short slender beak.



In waste places, naturalized from Europe in southern New Jersey, Pennsylvania and southward, locally adventive or fugitive northward. Summer. *Delphinium Ajacis* of the gardens, which is commonly cultivated and occasionally seen outside of fences, may be distinguished from this species by its pubescent follicles, shorter spurs, longer and denser racemes.

2. Delphinium urceolàtum Jacq. Tall Larkspur. (Fig. 1563.)

Delphinium urceolatum Jacq. Coll. 1: 153 1786.

Delphinium exaltatum Ait. Hort. Kew. 2: 244. 1789.

Slender, 2°–6° high, glabrous or sparingly hairy below, densely pubescent above. Leaves large, all but the upper petioled, deeply 3–5-cleft, the divisions lanceolate or oblanceolate, cuneate, acuminate, cleft and toothed toward the apex, upper ones reduced to small linear or lanceolate bracts subtending the flowers; racemes dense, elongated (sometimes over 1° in length); flowers purple or blue, 8″–10″ long, downy-pubescent, the lower pedicels about 1′ long; spur nearly straight, 4″ long; follicles 3, erect, 4″ long, pubescent, tipped with a subulate beak.

In woods, Allegheny and Huntingdon Cos., Pa., to Minnesota, south to North Carolina, Alabama, and Nebraska. July–Aug.

3. Delphinium Carolinìanum Walt. Carolina Larkspur. (Fig. 1564.)

Delphinium Carolinianum Walt. Fl. Car. 155. 1788.

Delphinium azureum Michx. Fl. Bor. Am. 1: 314. 1803.

Stem slender, more or less pubescent, 1°–2° high. Leaves deeply cleft into linear toothed or cleft segments; raceme terminal, 4′–8′ long; flowers pedicelled, blue varying to white, about 1′ long, the spur curved upward, 8″ long; follicles 3, erect or slightly spreading, downy, 7″–9″ long, tipped with a subulate beak; seed-coat rugose.

Prairies and open grounds, Illinois to Manitoba, south to Florida and Texas; also in the Rocky Mountain region. May–July.

4. Delphinium tricórne Michx. Dwarf Larkspur. (Fig. 1565.)

Delphinium tricorne Michx. Fl. Bor. Am. 1: 314. 1803.

Stout, glabrous or pubescent, simple, 1°–3° high. Leaves slender-petioled, deeply 5–7-cleft or divided, the divisions linear or obovate, obtuse, entire, or again cleft and toothed; raceme loose, 4′–5′ long, mostly several-flowered; flowers 1′–1½′ long, blue or white; spur generally slightly bent, ascending, 10″–15″ long; follicles 3, widely spreading, 5″–6″ long, tipped with a short beak; seed-coat smooth, dark.

Western Pennsylvania to the mountains of Georgia, west to Minnesota and Arkansas. Roots tuberous. April–June.

13. ACONÌTUM L. Sp. Pl. 532. 1753.

Tall or long, erect ascending or trailing perennial herbs, with palmately lobed or divided leaves, and large irregular showy flowers. Sepals 5, the posterior (upper) one larger, hooded or helmet-shaped. Petals 2–5, small, the two superior ones hooded, clawed, concealed in the helmet, the three posterior ones, when present, minute. Stamens numerous. Carpels 3–5, sessile, many-ovuled, forming follicles at maturity. [Ancient Greek name for these plants.]

A genus of beautiful plants including some 18 species, mostly natives of mountainous regions in the north temperate zone. Besides the following, 2 others are found in the Rocky Mountains and on the Pacific Coast. Roots poisonous, as are also the flowers of some species.

Flowers blue.
- Helmet arched, tipped with a descending beak. 1. *A. Noveboracense.*
- Helmet conic, slightly beaked. 2. *A. uncinatum.*

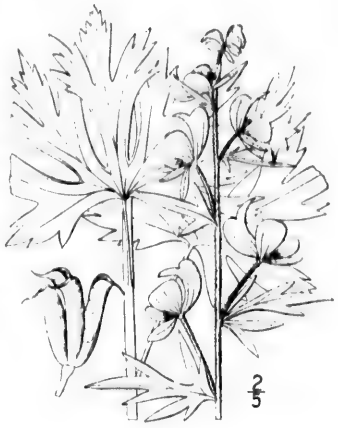
Flowers white; stem trailing; helmet elongated-conic. 3. *A. reclinatum.*

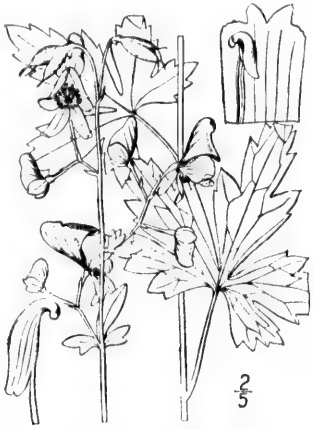
1. Aconitum Noveboracénse A. Gray. New York Monkshood. (Fig. 1566.)

Aconitum Noveboracense A. Gray; Coville, Bull. Torr. Club, 13: 190. 1886.

Slender, erect, about 2° high, leafy. Lower leaves all petioled, 3′–4′ broad, nearly orbicular, deeply 5–7-cleft, the divisions obovate, cuneate, toothed and cut, acute or acuminate, glabrous, rather thin; upper leaves nearly sessile, 3–5-cleft, otherwise similar, subtending branches of the loose pubescent few-flowered panicle; flowers blue, 6″ broad, about 1′ high, the arched gibbous helmet tipped with a prominent descending beak about 3″ long; follicles erect, 3″ long, subulate-beaked.

Orange, Ulster and Chenango Counties, N. Y. Nearest *A. paniculatum* Lam. of central Europe. June–Aug.





2. Aconitum uncinàtum L. Wild Monkshood. (Fig. 1567.)

Aconitum uncinatum L. Sp. Pl. Ed. 2, 750. 1762.

Slender, weak, 2°–4° long, ascending or climbing, leafy. Leaves thick, broader than long, 3′–4′ wide, deeply 3–5-lobed or cleft; lobes oblong or ovate-lanceolate, cleft or toothed, acute, glabrous or nearly so; panicle few-flowered, pubescent; flowers clustered at the ends of its branches, blue, 1′ broad or more; helmet erect, obtusely conic, acute in front but scarcely beaked; follicles 3, 6″–7″ long, subulate-beaked.

In woods, southern Pennsylvania and south along the mountains to Georgia. Also in Wisconsin. Ascends to 3000 ft. in Virginia. June–Sept.

3. Aconitum reclinàtum A. Gray. Trailing Wolfsbane. (Fig. 1568.)

Aconitum reclinatum A. Gray, Am. Journ. Sci. 42: 34. 1842.

Trailing, 2°–8° long. Leaves 3–7-cleft, all but the upper petioled, thin, the lower 6′–8′ broad, mainly obovate, acute, toothed and cleft toward the apex; simple panicle or raceme loose, pubescent; flowers white, 8″–10″ long; helmet horizontal or nearly so, elongated-conic, with a straight, short beak; follicles 3, 5″ long, with slender divergent beaks.

In woods, Cheat Mountain, Virginia, south along the Alleghanies to Georgia. Ascends to 5500 ft. in North Carolina. July–Aug.

14. ANEMÒNE L. Sp. Pl. 538. 1753.

Erect perennial herbs. Basal leaves lobed, divided or dissected, those of the stem forming an involucre near to or remote from the flower. Sepals 4–20, petaloid. Petals none. Stamens ∞, shorter than the sepals. Carpels ∞. Achenes compressed, 1-seeded. [From the Greek, a flower shaken by the wind.]

About 75 species, widely distributed through the temperate and subarctic regions of both hemispheres. About 16 species are natives of North America.

* Achenes densely woolly.

Stem simple, slender, 1-flowered.
Root tuberous; sepals 6–20, narrow. 1. *A. Caroliniana.*
Rootstock slender; sepals 5–6, oval. 2. *A. parviflora.*
Stem commonly branching above, tall, generally 2–several-flowered.
Leaves of the involucre sessile or short-petioled; sepals red; head of fruit globose or oval. 3. *A. multifida.*
Leaves of the involucre slender-petioled; sepals white or green; head cylindric, oval, or oblong.
Head of fruit cylindric; divisions of the leaves wedge-shaped, narrow. 4. *A. cylindrica.*
Head of fruit oblong or oval; divisions of the leaves ovate, broad. 5. *A. Virginiana.*

* * Achenes pubescent, or nearly glabrous.

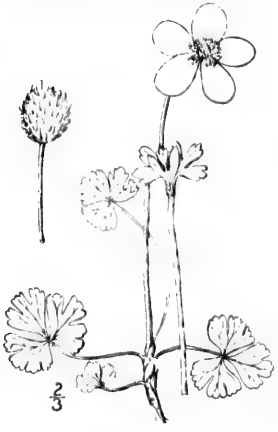
Leaves of the involucre sessile.
Stout, 1°–2° high, branching and bearing several flowers; carpels nearly orbicular. 6. *A. Canadensis.*
Slender, 2′–12′ high, 1-flowered; carpels narrow. 7. *A. Richardsonii.*
Leaves of the involucre petioled.
Involucral leaf divisions lobed and incised; plant 4′–9′ high. 8. *A. quinquefolia.*
Involucral leaf-divisions dentate; plant 10′–16′ high. 9. *A. trifolia.*

1. Anemone Caroliniàna Walt. Carolina Anemone. (Fig. 1569.)

Anemone Caroliniana Walt. Fl. Car. 157. 1788.

Sparsely hairy, 4′–10′ high, arising from a tuber 3″–4″ in diameter. Basal leaves slender-petioled, 3-divided, the divisions variously lobed and parted, those of the involucre sessile and 3-cleft; flower erect, 9″–18″ broad; sepals 6–20, linear-oblong, purple, varying to white; head of fruit oblong; achenes densely woolly.

Open places, Illinois to Wisconsin and Nebraska, south to Georgia and Texas. April–May.



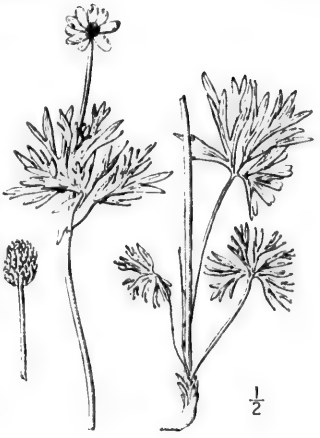
2. Anemone parviflòra Michx. Northern Anemone. (Fig. 1570.)

Anemone parviflora Michx. Fl. Bor. Am. 1: 319. 1803.

Sparingly hairy, 4′–12′ high from slender rootstocks. Basal leaves long-petioled, 3-parted, the broadly wedge-shaped divisions obtusely lobed or crenate, those of the involucre nearly sessile, similarly lobed; flower 1′ in diameter or less; sepals oval, very obtuse, white; head of fruit short-oval or globose; achenes densely woolly.

Anticosti, Labrador, Newfoundland and Quebec to Wisconsin, Minnesota, and in arctic America, south in the Rocky Mountains to Colorado. Also in northern Asia. May–June.

3. **Anemone multifida** Poir. Cut-leaved Anemone. Red Wind-flower. (Fig. 1571.)



Anemone multifida Poir. in Lam. Encycl. Suppl. 1: 364. 1810.

Anemone Hudsoniana Richards. Franklin's Journey, 741. 1823.

Silky-hairy, 6′–18′ high, sparingly branched, the lateral peduncles involucrate. Basal leaves long-petioled, reniform, 3–5-parted, the divisions cleft into linear acute lobes, those of the involucres short-petioled and more or less cuneate, otherwise similar; sepals 5–9, greenish or red, oblong, forming a flower ½′–1′ broad; head of fruit globose or oblong, ½′–1′ long; achenes compressed, densely woolly, tipped with the short subulate styles.

Anticosti, Hudson Bay and New Brunswick to northern New England, Michigan, Minnesota, Nebraska and Alaska, and in the Rocky Mountains south through Colorado. Also at the Strait of Magellan. Summer.

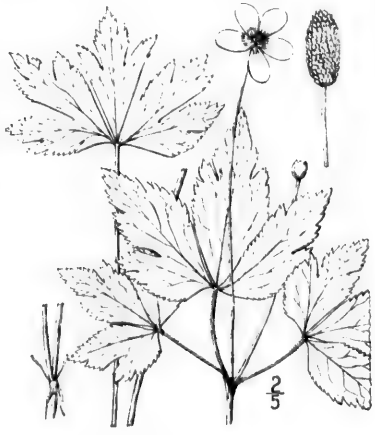
4. **Anemone cylindrica** A. Gray. Long-fruited Anemone. (Fig. 1572.)

Anemone cylindrica A. Gray, Ann. Lyc. N. Y. 3: 221. 1836.

Silky-hairy throughout, 1–2° high, branched at the involucre. Basal leaves tufted, long-petioled, broader than long, 3–5-parted, the divisions cuneate-obovate or cuneate-oblanceolate, narrow; those of the involucre similar, their petioles about 1′ long; sepals 5-6, greenish-white, oblong, generally obtuse; flowers about 9″ broad, on elongated generally naked peduncles; head of fruit cylindric, 1′ in length or more; achenes compressed, woolly, tipped with the minute styles.

Open places, eastern New Brunswick, Ontario, New York and northern New Jersey to Kansas and Manitoba. Also in the Rocky Mountains, south to New Mexico, and in British Columbia. June–Aug.

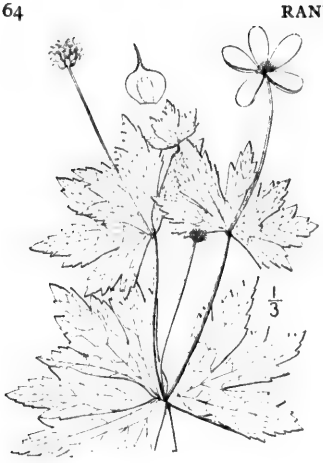
5. **Anemone Virginiàna** L. Tall Anemone. (Fig. 1573.)



Anemone Virginiana L. Sp. Pl. 540. 1753.

Hairy, 2°–3° high, stout, branching at the involucre, the lateral peduncles bearing secondary involucres. Basal leaves long-petioled, broader than long, 3-parted, the divisions broadly cuneate-oblong, variously cleft and divided into acute serrate lobes; those of both primary and secondary involucres similar, on petioles 1′–2′ long; sepals generally 5, white or greenish, acute or obtuse; flower 9″–18″ broad; head of fruit oblong, 9″–12″ long; achenes compressed, woolly, tipped by the subulate styles.

In woods, Nova Scotia to South Carolina, west to Kansas, Manitoba and the Canadian Rocky Mountains. Ascends to 4200 ft. in North Carolina. Called also Thimble-weed. June–Aug.



6. Anemone Canadénsis L. Canada Anemone. (Fig. 1574.)

Anemone Canadensis L. Syst. Ed. 12, 3: App. 231. 1768.
Anemone Pennsylvanica L. Mant. 2: 247. 1771.

Rather stout, 1°–2° high, somewhat hairy, especially on the lower surfaces of the leaves, branching at the involucre. Basal leaves long-petioled, broader than long, 3–5-parted, the divisions broad, oblong, acute, variously cleft and toothed, those of both primary and secondary involucres similar, sessile; sepals white, oblong, obtuse; flower 1′–1½′ broad; head of fruit globose; achenes flat, nearly orbicular, pubescent, tipped with the stout persistent style, which is about their own length.

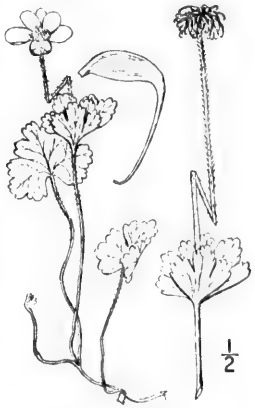
Low grounds, Labrador to the Northwest Territory, south to Pennsylvania, Kansas, and in the Rocky Mountains to Colorado. *A. dichotoma* L., to which this has been referred, is a Siberian species with glabrous ovate achenes. May–Aug.

7. Anemone Richardsònii Hook. Richardson's Anemone. (Fig. 1575.)

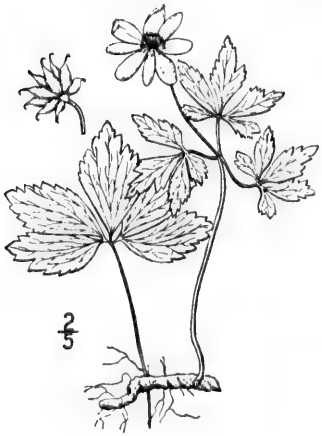
Anemone Richardsonii Hook. Fl. Bor. Am. 1: 6. 1829.

Low, slender, pubescent, 2′–12′ high from slender rootstocks. Basal leaves reniform, slender-petioled, 3–5-parted, the lobes acute, broadly oblong, dentate or crenate; those of the involucre similar, sessile; flower solitary, 9″ broad, white (?); sepals about 6, oblong; head of fruit depressed-spherical; achenes nearly glabrous, compressed, ovate-oblong, reflexed, tipped with a hooked persistent style of about their own length.

Shore of Hudson Bay and in arctic America generally. Also widely distributed in Siberia. Summer.



8. Anemone quinquefòlia L. Wind-flower. (Fig. 1576.)



Anemone quinquefolia L. Sp. Pl. 541. 1753.

Anemone nemorosa Michx. Fl. Bor. Am. 1: 319. 1803. Not L. 1753.

Anemone nemorosa var. *quinquefolia* A. Gray, Man. Ed. 5, 38. 1867.

Low, simple, nearly glabrous, 4′–9′ high, from thick horizontal rootstocks. Basal leaves long-petioled, appearing later than the flowering stem, 5-parted, the divisions oblong, cuneate, dentate; those of the involucre on slender petioles about 9″ long, 3–5-parted, the divisions 1½′ long, acute, variously cut and lobed; flower solitary, 1′ broad; sepals 4–9, obovate or oval, white, or purplish without; head of fruit globose, inclined; achenes pubescent, oblong, tipped with the hooked styles.

In low woods, Nova Scotia to Georgia, west to the Rocky Mountains. Also in China. Ascends to 3500 ft. in Virginia. Readily distinguishable from the European *A. nemorosa* L., by its slender habit, slender petioles, less lobed divisions of the involucral leaves, paler green foliage, and smaller flowers. April–June.

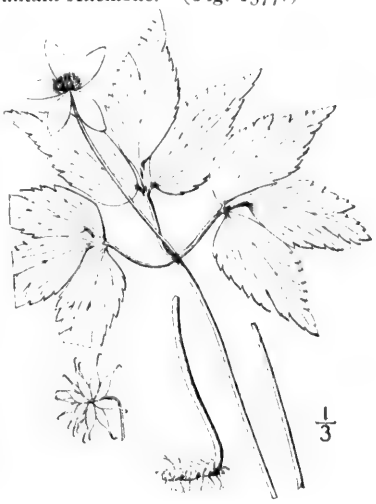
9. Anemone trifòlia L. Mountain Anemone. (Fig. 1577.)

Anemone trifolia L. Sp. Pl. 540. 1753.

Anemone lancifolia Pursh, Fl. Am. Sept. 387. 1814.

Stout, 6′–16′ tall, nearly glabrous throughout. Basal leaves mostly 3-divided (sometimes 4–5-divided), long-petioled, dentate, often somewhat lobed; involucral leaves stout, petioled, 3-parted, the divisions oblong-lanceolate, acute or acuminate at the apex, dentate, often slightly lobed, 1′–3′ long; flower solitary, white, 1′–1½′ broad when expanded; peduncles 1′–4′ long; sepals oblong; head of fruit globose, 5″–6″ in diameter; achenes 10–20, oblong, finely pubescent, tipped with the hooked style.

Southern Pennsylvania, southwestern Virginia and North Carolina, chiefly in the mountains; in Virginia usually in company with the Lily-of-the-Valley. Also in the south Austrian Alps and the mountains of northern Italy. May.



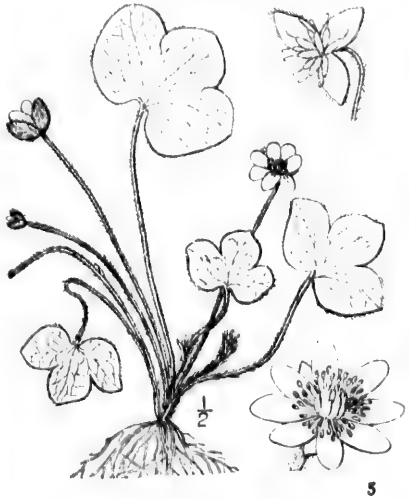
15. HEPÁTICA Scop. Fl. Carn. 567. 1760.

Perennial scapose herbs, with long-petioled thick 3-lobed evergreen basal leaves, and large white or purple flowers, solitary on slender scapes. Involucre of 3 small sessile leaves close under the flowers, simulating a calyx. Sepals membranous, petal-like. Stamens all anther-bearing. Achenes short-beaked, pubescent. [Name ancient, from the supposed resemblance of the leaves to the liver.]

A genus of about 4 species, natives of the north temperate zone. Only the following are known from North America.

Lobes of the leaves rounded or obtuse. 1. *H. Hepatica.*
Lobes of the leaves acute. 2. *H. acuta.*

1. Hepatica Hepática (L.) Karst. Round-lobed or Kidney Liver-leaf. Noble Liverwort. (Fig. 1578.)



Anemone Hepatica L. Sp. Pl. 538. 1753.

Hepatica triloba Chaix in Vill. Hist. Pl. Dauph. 1: 336. 1786.

Hepatica Hepatica Karst. Deutsch. Fl. 559. 1880–83.

Scapes 4′–6′ high, villous; roots fibrous. Leaves long-petioled, reniform, 2′–2½′ broad when mature, spreading on the ground, 3-lobed, and the lobes sometimes toothed or again lobed, obtuse; involucre of 3 sessile obtuse oblong leaves immediately under the flower; flowers blue, purple or white, 6″–10″ broad; sepals oval or oblong, obtuse, longer than the stamens; achenes several, 2″ long, oblong, acute, hairy.

In woods, often in large tufts, Nova Scotia to northern Florida, west to Manitoba, Iowa and Missouri. Ascends to 2600 ft. in Virginia. Also in Europe and Asia. Dec.–May.

2. Hepatica acùta (Pursh) Britton. Sharp-lobed or Heart Liver-leaf. (Fig. 1579.)

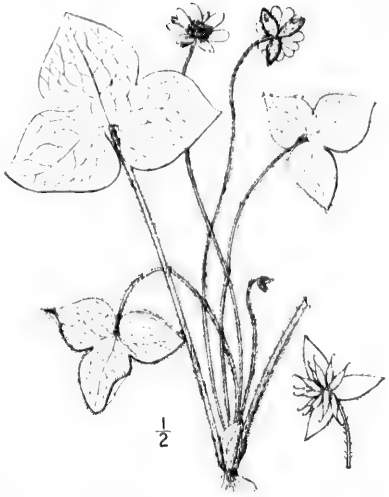
Hepatica triloba var. *acuta* Pursh, Fl. Am. Sept. 391. 1814.

Hepatica acutiloba DC. Prodr. 1: 22. 1824.

Hepatica acuta Britton, Ann. N. Y. Acad. Sci. 6: 234. 1891.

Scapes 4′–9′ high, villous. Plant closely resembling the preceding, differing in that the leaf-lobes and those of the involucre are acute or acutish.

In woods, Quebec and throughout Ontario, south in the Alleghanies to Georgia, but rare or absent near the Atlantic Coast, west to Iowa and Minnesota. Puzzling forms occur which are referable with about equal certainty to the preceding species. The leaf-form of the German plant is quite intermediate between our *Hepatica* and *acuta*. A dioecious tendency of this species has been observed by Prof. Byron D. Halsted at Ames, Iowa. March–April.



16. SYNDÉSMON Hoffmg. Flora, **15**: Part 2, Intell. Bl. 4, 34. 1832.

[ANEMONELLA Spach, Hist. Veg. 7: 239. 1839.]

A glabrous perennial herb from a cluster of tuberous-thickened roots, with basal 2–3-ternately compound leaves, those of the involucre similar but sessile, and large terminal umbellate slender-pedicelled white flowers. Sepals thin, petaloid. Petals none. Stamens all anther-bearing. Achenes terete, deeply grooved; stigma sessile, truncate. [Greek, bound together, the plant uniting many of the characters of *Anemone* and *Thalictrum*.]

A monotypic genus of eastern North America.

1. Syndesmon thalictroides (L.) Hoffmg. Rue-Anemone. (Fig. 1580.)

Anemone thalictroides L. Sp. Pl. 542. 1753.
Thalictrum anemonoides Michx. Fl. Bor. Am. 1: 322. 1803.
Syndesmon thalictroides Hoffmg. Flora, 15: Part 2, Intell. Bl. 4, 34. 1832.
Anemonella thalictroides Spach, Hist. Veg. 7: 240. 1839.

Low, glabrous, 4′–9′ high, the flowering stem arising in early spring from the cluster of tuberous roots, the ternately-compound basal leaves appearing later and resembling those of *Thalictrum*. Leaves of the involucre similar, sessile, the leaflets long-petioled; sepals 5–10, white or pinkish, longer than the stamens; flower ½′–1′ broad; flowers perfect, umbellate, immediately above the involucre; stigmas depressed-truncate, sessile; achenes sessile, pointed, 4″–6″ long.

In woods throughout the eastern United States, west to Kansas and Minnesota, sparingly in Ontario. Not reported from the maritime provinces of Canada. Leaflets are occasionally borne on the stem below those of the involucre. March–June.

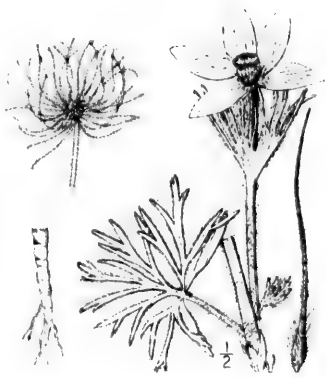
17. PULSATÍLLA Adans. Fam. Pl. **2**: 460. 1763.

Perennial scapose herbs, with thick rootstocks, basal long-petioled digitately divided leaves, and large purple or white solitary flowers. Involucre remote from the flower, 3-leaved. Sepals petaloid. Petals none. Inner stamens anther-bearing, the outer ones often sterile. Achenes with long persistent plumose styles. [Latin name, unexplained.]

About 18 species, natives of the north temperate and subarctic zones. Besides the following, another occurs in northwestern North America.

1. Pulsatilla hirsutíssima (Pursh) Britton. American or Nuttall's Pasque Flower. (Fig. 1581.)

Clematis hirsutissima Pursh, Fl. Am. Sept. 385. 1814.
Anemone Nuttalliana DC. Syst. 1: 193. 1818.
Anemone patens var. *Nuttalliana* A. Gray, Man. Ed. 5, 36. 1867.
Pulsatilla hirsutissima Britton, Ann. N. Y. Acad. Sci. 6: 217. 1891.



Villous, 6′–16′ high. Leaves much divided into narrow linear acute lobes, the basal on slender petioles, those of the involucre sessile and erect or ascending; sepals ovate-oblong, light bluish-purple; fruit a head of silky achenes with long plumose styles, like those of some *Clematis*.

In dry soil, prairies of Illinois to the Northwest Territory, British Columbia, Nebraska and Texas. After flowering the peduncle elongates, sometimes to a foot or more. March–April.

18. CLÉMATIS L. Sp. Pl. 543. 1753.

Climbing vines, or erect or ascending perennial herbs, more or less woody. Leaves opposite, slender-petioled, pinnately compound, lobed, or in some species entire. Sepals 4 or 5, valvate in the bud, petaloid. Petals none. Stamens ∞. Pistils ∞. Achenes 1-seeded. Style long, persistent, plumose, silky or naked. [Greek name for some climbing plant.]

About 100 species of very wide geographic distribution, most abundant in temperate regions. Besides the following, some 12 others occur in the southern and western parts of North America.

* Climbing vines; leaves pinnate or 3-foliolate.

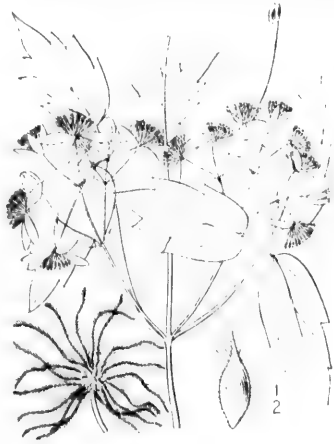
Flowers panicled, numerous; filaments glabrous.
- Leaves 3-foliolate; eastern. — 1. *C. Virginiana.*
- Leaves pinnately 5–7-foliolate; western. — 2. *C. ligusticifolia.*

Flowers solitary; filaments pubescent.
- Sepals thin; fruiting styles silky, not plumose.
  - Sepals conspicuously dilated; leaves thin, pinnately veined. — 3. *C. crispa.*
  - Sepals with recurved tips; venation strongly reticulated. — 4. *C. Simsii.*
- Sepals leathery, their tips recurved; fruiting styles plumose. — 5. *C. Viorna.*

** Erect or ascending perennial herbs; leaves simple or pinnate.

Glabrous, glaucous; leaves simple, or pinnate and tendril-bearing. — 6. *C. Addisonii.*

Villous-pubescent; leaves simple or pinnate, not tendril-bearing.
- Leaves simple, entire or rarely lobed.
  - Fruiting styles long, plumose; eastern species.
    - Flowers yellowish-green; style-plumes brown; achenes straight. — 7. *C. ochroleuca.*
    - Flowers purple; style-plumes white; achenes distinctly oblique. — 8. *C. ovata.*
  - Fruiting styles short, silky; western species. — 9. *C. Fremontii.*
- Leaves pinnate, or the lowest entire. — 10. *C. Scottii.*



1. Clematis Virginiàna L. Virginia Virgin's Bower. (Fig. 1582.)

Clematis Virginiana L. Amoen. Acad. 4: 275. 1759.

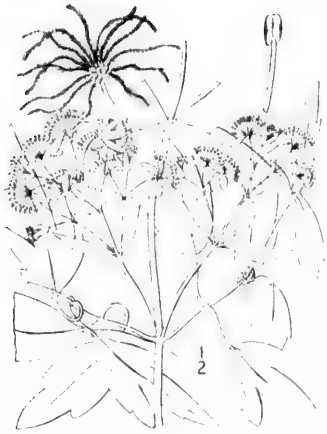
A long vine, climbing over bushes in low woodlands and along fences and water-courses. Leaves glabrous or nearly so, trifoliolate; leaflets mostly broadly ovate, acute at the apex, toothed or lobed, sometimes slightly cordate; flowers white, in leafy panicles, polygamo-dioecious, 8″–15″ broad when expanded; filaments glabrous; persistent styles plumose, 1′ long or more.

Georgia to Kansas, northward to Nova Scotia and Manitoba. Leaves rarely 5-foliolate. Ascends to 2600 ft. in Virginia. July–Sept.

Clematis Virginiàna Catesbyàna (Pursh) Britton.

Clematis Catesbyana Pursh, Fl. Am. Sept. 736. 1814.

Leaves more or less pubescent, often biternate. South Carolina and Florida to Missouri and Mississippi.

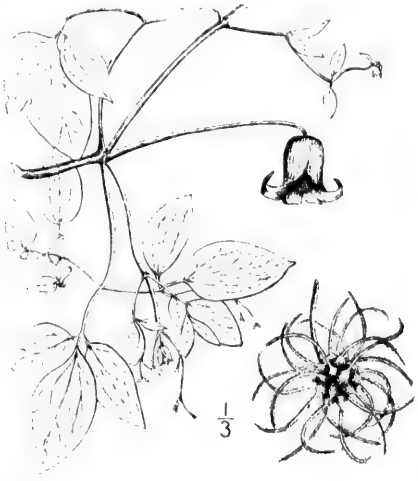


2. Clematis ligusticifòlia Nutt. Western Virgin's Bower. (Fig. 1583.)

Clematis ligusticifolia Nutt.; T. & G. Fl. N. A. 1: 9. 1838.

A trailing and climbing vine, nearly glabrous. Leaves pinnately 5-foliolate, the lower pair of leaflets generally remote from the upper; leaflets oblong or ovate-lanceolate, acute and sometimes acuminate at the apex, rounded or cuneate at the base, toothed, lobed or divided; flowers white, in leafy panicles, 6″–9″ broad when expanded, the stamens about equalling the sepals; filaments glabrous; persistent styles plumose throughout, nearly white, 1′–2′ long.

Western Nebraska, Missouri, and throughout the Rocky Mountains, west to the Pacific Coast. June–Aug.



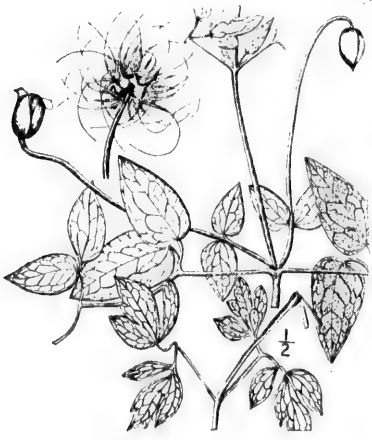
3. Clematis crispa L. Marsh Clematis. (Fig. 1584.)

Clematis crispa L. Sp. Pl. 543. 1753.

Clematis cylindrica Sims, Bot. Mag. *pl. 1160.* 1809.

A climbing vine. Leaves pinnate; leaflets mostly trifoliolate, the ultimate divisions entire or occasionally lobed, glabrous and thin; flowers solitary, nodding, bluish-purple, 9″–18″ long; calyx cylindric below, but the sepals thin and widely spreading above, their margins undulate; filaments hairy; persistent styles silky, not plumose.

In marshes, southeastern Virginia to Florida and Texas. May–June. The most beautiful of our native species.



4. Clematis Simsii Sweet. Sims' Clematis. (Fig. 1585.)

Clematis cordata Sims, Bot. Mag. *pl. 1816.* 1816. Not Pursh, 1814.

Clematis Simsii Sweet, Hort. Brit. 1: 1. 1827.

Clematis Pitcheri T. & G. Fl. N. A. 1: 10. 1838.

A high climbing vine, the branches more or less pubescent. Leaves pinnate; leaflets entire, lobed or trifoliolate, thick, reticulated, generally mucronate; flowers solitary; calyx campanulate, less than 1′ long, purplish, pubescent; sepals with recurved margined tips; filaments hairy; persistent styles more or less pubescent, about 1′ long.

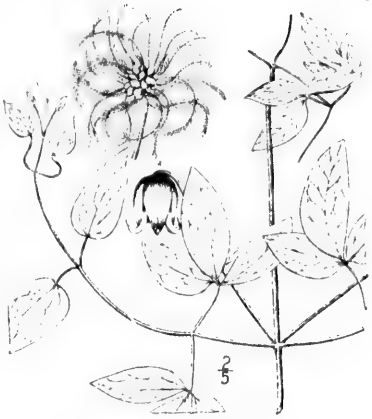
Southern Indiana to Missouri and Texas. May–Aug.

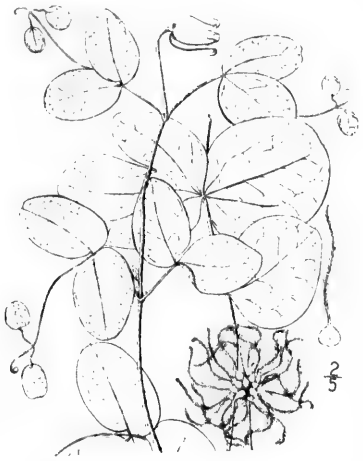
5. Clematis Viórna L. Leather-flower. (Fig. 1586.)

Clematis Viorna L. Sp. Pl. 543. 1753.

A vine, climbing to the height of 10° or more over bushes in rich soil. Leaves mostly pinnate; leaflets glabrous, entire, lobed or trifoliolate; uppermost and lowest leaves often entire; calyx ovoid-campanulate, purple, the sepals remarkably thick; flowers solitary; persistent styles plumose throughout, 1′ long or more, brownish.

Southern Pennsylvania to Ohio and West Virginia, south to Georgia and Tennessee. Reported from further north and west. Ascends to 4000 ft. in Virginia. May–July.





6. Clematis Addisònii Britton. Addison Bowman's Clematis. (Fig. 1587.)

Clematis ovata T. & G. Fl. N. A. 1: 8. 1838. Not Pursh. 1814.
C. Addisonii Britton, Mem. Torr. Club, 2: 28. 1890.

Ascending or erect, 1°–3° long, simple or branched, tufted, glaucous and glabrous. Lower leaves simple, entire or 1–4-lobed, obtuse, deep bluish-green above, glaucous beneath, sessile, clasping, 2′–4′ long; upper leaves pinnate, or sometimes simple, tendril-bearing, leaflets 2–4, ovate, sessile, flowers solitary, terminal and axillary, purplish, nodding; calyx ovoid, 9″–15″ long, 5″–7″ broad, contracted near the summit; sepals thick, lanceolate, acute, their tips recurved; stamens numerous, pubescent above; achenes flat, nearly orbicular, silky-pubescent; persistent styles 1′–1¼′ long, brown-plumose throughout.

Banks near Roanoke, Va.; North Carolina and Georgia. May–June.

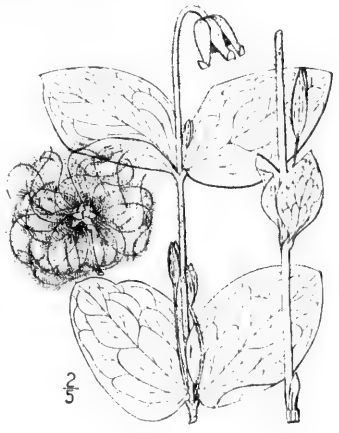
Clematis viornioides Britton, is a hybrid between this and *C. Viorna*. Roanoke, Va.

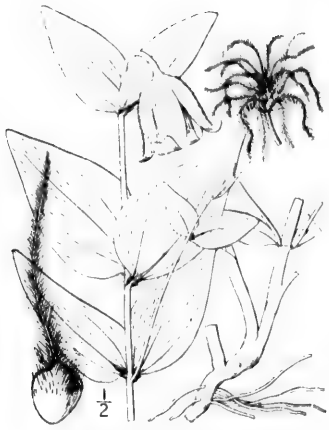
7. Clematis ochroleùca Ait. Erect Silky Clematis. (Fig. 1588.)

Clematis ochroleuca Ait. Hort. Kew. 2: 260. 1789.
Clematis sericea Michx. Fl. Bor. Am. 1: 319. 1803.

An erect silky-hairy plant, 1°–2° high, somewhat woody at the base. Leaves simple, sessile, ovate, obtuse, glabrous and reticulated above, silky beneath, entire or occasionally lobed, mucronate; flower terminal, nodding, 10″ long; calyx cylindraceous, green; sepals thick, very silky without, their tips recurved; head of fruit erect; achenes scarcely oblique; persistent styles yellowish-brown, plumose throughout, 1′–2′ long.

Brooklyn, N. Y. (locality now destroyed); abundant in several localities on Staten Island; Pennsylvania, and southward to Georgia. May–June. Local.



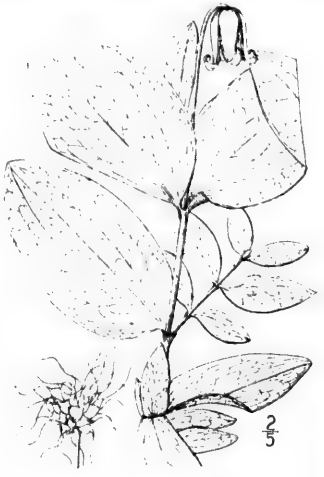


8. Clematis ovàta Pursh. Erect Mountain Clematis. (Fig. 1589.)

Clematis ovata Pursh, Fl. Am. Sept. 736. 1814.

Similar to the preceding species, stems stiff, 1°–2° tall, pubescent when young, becoming nearly glabrous when old. Leaves ovate, entire, 1½′–2′ long, strongly reticulate-veined and nearly glabrous when mature; flowers solitary at the ends of the stem or branches, purple, nodding, nearly 1′ long; achenes distinctly oblique, persistent styles plumose throughout, the plumes white or slightly dingy, 1′–1½′ long.

Kate's Mountain, White Sulphur Springs, W. Va. Apparently first collected on Negro's Head, a mountain of the Blue Ridge in South Carolina or Georgia. May–June.



9. Clematis Fremóntii S. Wats. Fremont's Clematis. (Fig. 1590.)

Clematis Fremontii S. Wats. Proc. Am. Acad. 10: 339 1875

Clematis ochroleuca var. *Fremontii* J. F. James, Journ. Cinc. Soc. Nat. Hist. 6: 120. 1883.

Stout, erect, 6′–15′ high, the stem villous-pubescent, especially at the nodes, woody at the base, simple or branched. Leaves simple, sessile, coriaceous, conspicuously reticulated, glabrous except on the veins beneath, broadly ovate, obtuse or acutish, entire or sparingly toothed; flowers terminal, nodding; calyx purple, 1′ long; sepals thick, tomentose on the margins, their tips recurved; head of fruit 1′ in diameter or more, erect; persistent styles about ½′ long, silky below, naked above.

Prairies, Kansas and Missouri. Rare and local. April–May.

10. Clematis Scóttii Porter. Scott's Clematis. (Fig. 1591.)

Clematis Scottii Porter, in Porter & Coulter, Fl. Colo. 1. 1874.

Clematis Douglasii var. *Scottii* Coulter, Man. Bot. Rocky Mts. 3. 1885.

Somewhat villous when young, nearly glabrous when old, stems erect, simple, or nearly so, or branched from the base, 10′–2° tall. Leaves petioled, the upper pinnate or bipinnate, 3′–6′ long, their segments lanceolate, oblong or ovate, entire or few-toothed, stalked, acuminate or acute at the apex, narrowed at the base, 6″–18″ long; lower leaves sometimes entire, or pinnately cleft, smaller than the upper; flowers solitary, terminal or also axillary, long-peduncled, nodding, nearly 1′ long, purple; sepals ovate-lanceolate, thick; persistent styles plumose throughout, 1′ long or more, the plumes brown.

In dry soil, South Dakota to Nebraska, Colorado, and Idaho. May–July.

19. ATRÁGENE L. Sp. Pl. 543. 1753.

Perennial climbing vines, with opposite petioled compound leaves, and large showy peduncled flowers, solitary in the axils, or at the ends of the branches. Sepals very large, petaloid, mostly membranous and prominently veined. Petals small, spatulate. Stamens very numerous, the outer ones usually with broadened filaments. Styles long, persistent, plumose. [Ancient Greek name for some vine.]

About 3 species, natives of the north temperate zone. In addition to the following, another occurs in the Rocky Mountains and one in northwestern North America.

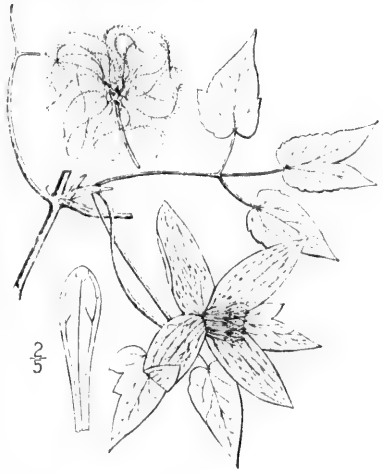
1. Atragene Americàna Sims. Purple Virgin's Bower. (Fig. 1592.)

Atragene Americana Sims, Bot. Mag. *pl.* 887. 1806.

Clematis verticillaris DC. Syst. 1: 166. 1818.

A trailing or partly climbing vine of rocky woodlands. Leaves trifoliolate; leaflets thin, ovate, acute, toothed or entire, more or less cordate; petioles slender; flowers solitary, purplish blue, 2′–4′ broad when expanded; sepals 4, thin and translucent, strongly veined, silky along the margins and the veins; petals spatulate, 6″–9″ long; persistent styles plumose throughout.

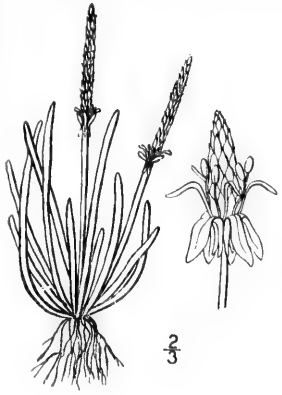
Hudson Bay to Manitoba, south to Virginia and Minnesota. Ascends to 3000 ft. in the Catskills. May–June.



20. MYOSÙRUS L. Sp. Pl. 284. 1753.

Diminutive annual herbs, with fibrous roots, basal linear entire leaves and 1-flowered scapes. Sepals 5 (rarely 6–7), long-spurred at the base. Petals the same number or none, when present greenish-yellow, narrow, the claw bearing a nectariferous pit at the summit, the limb spreading. Stamens 5–25, about equalling the sepals. Pistils numerous, borne on a central axis, which becomes greatly elongated in fruit. Ovule 1, suspended. Achenes apiculate or aristate. [Greek, mouse-tail.]

A genus of insignificant plants of local but wide geographic distribution, consisting of the species here figured and 4 others found in west America and Australia.



1. Myosurus mínimus L. Mouse-tail. (Fig. 1593.)

Myosurus minimus L. Sp. Pl. 284. 1753.

Myosurus Shortii Raf. Am. Journ. Sci. 1: 379. 1819.

Myosurus minimus var. *Shortii* Huth, Engler's Bot. Jahrb. 16: 284. 1893.

Low, glabrous, 1′–6′ high, the scape at length surpassing the leaves and the elongated receptacle attaining the length of 1′ or more. Leaves all basal, 2′–4′ long, narrowly linear, blunt; petals present, small; achenes glabrous, apiculate,

In moist places, southern Ontario to Illinois, Kentucky and Florida. Reported from the Pacific Coast. Also in central Europe. At Norfolk, Va., the plant seems to have been introduced. April–July.

21. TRAUTVETTÈRIA F. & M. Ind. Sem. Petr. 1: 22. 1834.

Tall erect perennial herbs, with large palmately-lobed leaves, those of the stem distant. Sepals 3–5, concave, caducous. Petals none. Carpels ∞, 1-ovuled. Achenes capitate, sharply angular, inflated, tipped with the minute styles. Embryo large. Flowers small, white, corymbosely paniculate. [In honor of Prof. Trautvetter, a Russian botanist.]

A monotypic genus of North America and eastern Asia.

1. Trautvetteria Carolinénsis (Walt.) Vail. False Bugbane. (Fig. 1594.)

Hydrastis Carolinensis Walt. Fl. Car. 156. 1788.
Cimicifuga palmata Michx. Fl. Bor. Am. 1: 316. 1803.
Trautvetteria palmata F. & M. Ind. Sem. Petr. 1: 22. 1834.
Trautvetteria Carolinensis Vail, Mem. Torr. Club, 2: 42. 1890.

Stout, 2°–3° high, branching, nearly glabrous, except the lower surfaces of the leaves. Basal leaves long-petioled, 6′–8′ broad, 4′–5′ long, deeply lobed, the lobes acute and sharply dentate; panicle ample, the flowers 3″–6″ broad, borne in cymose clusters at the ends of its branches; filaments slender, slightly widened; anthers oblong.

Southwestern Pennsylvania to the mountains of Virginia and Kentucky, south to Florida, west to Indiana and Missouri. Ascends to 6000 ft. in North Carolina. June–July.

22. RANÚNCULUS L. Sp. Pl. 548. 1753.

Annual or perennial herbs, with alternate simple entire lobed or divided or dissected leaves, and yellow white or red flowers. Sepals mostly 5, deciduous. Petals equal in number or more, conspicuous or minute, provided with a nectariferous pit and a scale at the base of the blade. Carpels ∞, 1-ovuled. Achenes capitate or spicate, generally flattened, smooth, papillose or echinate, tipped with a minute or an elongated style. [Latin for a small frog, in allusion to the marsh habitat of many species.]

Some 200 species, widely distributed in the temperate and cool regions of both hemispheres and on mountain tops in the tropics. In addition to those here described, about 40 others inhabit the western and northwestern parts of the continent. The names *Crowfoot* or *Buttercup* are popularly applied to most of the species with large flowers and divided leaves.

* *Aquatic, with dissected submerged leaves, the upper ones lobed, floating or emersed; flowers large.* 1. *R. delphinifolius.*

** *Terrestrial or mud plants, with entire, lobed or divided leaves.* [Nos. 2, 3, 6, 7 and 9 sometimes in ditches or swamps.]

† **Creeping or decumbent perennials, with palmately lobed or divided leaves; flowers small.**

Plants leafy-stemmed.
More or less pubescent; leaves orbicular, palmately divided.
Achenes marginless; northern. 2. *R. Purshii.*
Achenes callous-margined; southwestern. 3. *R. Missouriensis.*
Glabrous; leaves 3-lobed or 3-cleft, cuneate at the base; arctic. 4. *R. hyperboreus.*
Plant scapose from filiform rootstocks. 5. *R. Lapponicus.*

†† **Plants of swamps or muddy shores; leaves entire or denticulate.**

Annuals; achenes beakless.
Petals 1″–2″ long; stamens few. 6. *R. pusillus.*
Petals 2″–3″ long; stamens numerous. 7. *R. oblongifolius.*
Perennials, rooting from the nodes; achenes beaked.
Stems trailing; achenes minutely beaked. 8. *R. reptans.*
Stems ascending or erect; achenes subulate-beaked. 9. *R. obtusiusculus.*

††† **Terrestrial species with some or all the leaves lobed or divided.**

Calyx conspicuously black-pubescent; arctic; flowers white or light yellow. 10. *R. nivalis.*
Calyx glabrous or pubescent; flowers yellow.
1. Achenes smooth, neither papillose, muricate nor spiny.
Plant low, arctic-alpine; leaves small, palmately lobed. 11. *R. pygmaeus.*
Plants neither arctic nor alpine.
Basal leaves, some or all of them, merely crenate.
Head of fruit oblong, 2–3 times as long as thick. 12. *R. pedatifidus.*
Head of fruit globose or subglobose.
Petals large, longer than the sepals.
Basal leaves oval or ovate, not cordate. 13. *R. ovalis.*
Basal leaves reniform or orbicular, cordate. 14. *R. Harveyi.*

Petals small, shorter than or equalling the sepals.
Styles very short.
Basal leaves cordate; plant glabrous or nearly so. 15. *R. abortivus.*
Basal leaves not cordate; plant villous. 16. *R. micranthus.*
Styles subulate, hooked, nearly one-half as long as the achene. 17. *R. Alleghaniensis.*
Leaves all lobed or divided.
Plant glabrous; stem hollow; flowers very small. 18. *R. sceleratus.*
Plants more or less pubescent.
Beak of the achene strongly hooked; flowers 4″–5″ wide. 19. *R. recurvatus.*
Beak of the achene short.
Erect plants, naturalized in fields; flowers 1′ broad.
Calyx spreading; roots fibrous. 20. *R. acris.*
Calyx reflexed; stem bulbous thickened at base. 21. *R. bulbosus.*
Erect or ascending plants of moist soil; flowers 3″–6″ broad.
Petals not longer than the reflexed sepals. 22. *R. Pennsylvanicus*
Petals longer than the sepals. 23. *R. Macounii.*
Ascending and creeping by stolons; flowers 1′ broad. 24. *R. repens.*
Beak of the achene long, stout or slender; flowers 6″–18″ broad.
Roots slender; beak stout; leaflets cuneate at base. 25. *R. septentrionalis.*
Roots thickened; beak of achene slender, subulate.
Leaf-segments broad, oblong or obovate. 26. *R. hispidus.*
Leaf-segments narrow, linear-oblong. 27. *R. fascicularis.*
2. Achenes with a few scattered papillae near the margins. 28. *R. parvulus.*
3. Achenes rough-papillose all over. 29. *R. parviflorus.*
4. Achenes muricate or spiny.
Leaf-lobes broad, obtuse. 30. *R. muricatus.*
Leaf-lobes narrow, subacute. 31. *R. arvensis.*

1. Ranunculus delphinifòlius Torr. Yellow Water-Crowfoot. (Fig. 1595.)

Ranunculus multifidus Pursh, Fl. Am. Sept. 736. 1814. Not Forsk. 1775.
R. delphinifolius Torr.; Eaton, Man. Ed. 2, 395. 1818.
Ranunculus lacustris Beck & Tracy, N. Y. Med. and Phys. Journ. 2: 112. 1823.

Aquatic or partly emersed, branching, sometimes several feet long. Immersed leaves repeatedly divided into capillary segments, short-petioled, 1′–3′ long; emersed leaves glabrous or pubescent, ½′–2′ broad, petioled or the upper nearly sessile, 3–5 divided, the divisions cleft into linear or cuneate segments; flowers yellow, 9″–18″ broad; petals 5–8, much longer than the sepals; head of fruit globose or oblong, 3″–5″ long; achenes less than 1″ long, callous-margined, tipped with a straight persistent beak of one-half their length or more.

In ponds, Ontario to Michigan, south to North Carolina and Missouri. The so-called var. *terrestris* appears to be an emersed form. June–Aug.

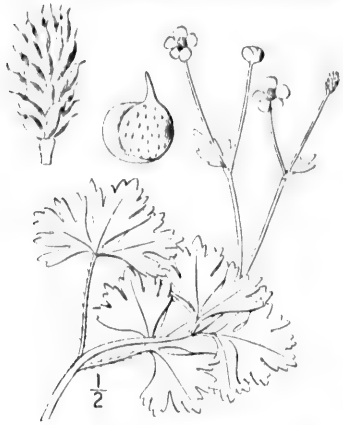
2. Ranunculus Púrshii Richards. Pursh's Buttercup. (Fig. 1596.)

Ranunculus Purshii Richards. Frank. Journ. 741. 1823.
Ranunculus limosus Nutt.; T. & G. Fl. N. A. 1: 20. 1838.
Ranunculus multifidus var. *repens* S. Wats. Bot. King's Exp. 8. 1871.

Perennial, creeping, pubescent at least on the younger parts, sometimes densely so; stems slender, often rooting from the lower nodes, 2′–8′ long. Leaves slender-petioled, orbicular or reniform in outline, ¼′–1′ wide, palmately divided nearly to the base into obtuse lobes or segments; flowers yellow, long-peduncled, 2″–7″ broad; sepals spreading, ovate, obtusish, early deciduous; petals about 5; head of fruit subglobose or ovoid-oblong, obtuse, 2″–3″ long; achenes little compressed, smooth, ½′ long, acutish on the back, abruptly tipped with a slender style of about one-third their length.

In moist soil, northern Michigan and Minnesota to western Ontario and arctic America, west to British Columbia, south in the Rocky Mountains to Colorado and Utah. July–Aug.

3. **Ranunculus Missouriénsis** Greene. Missouri Buttercup. (Fig. 1597.)



Ranunculus Missouriensis Greene, Erythea, 3: 20. 1895.

Perennial (?), similar to the preceding species but larger, sparingly pubescent; stems slender, decumbent, leafy, 1° long or more, rooting at the lower nodes. Leaves usually wider than long, thin, 1′–3′ wide, palmately divided nearly to the base into 3 obovate-cuneate incised and lobed segments, the lobes obtuse; petioles slender; flowers yellow, long-peduncled, 3″–4″ broad; petals about 5; head of fruit oblong, about 4″ long; achenes compressed, somewhat wrinkled, rather more than ½″ long, prominently callous-margined on the back, abruptly tipped by a subulate style of rather more than one-half their length.

In ditches and on borders of lakes, Missouri to New Mexico. July–Aug.

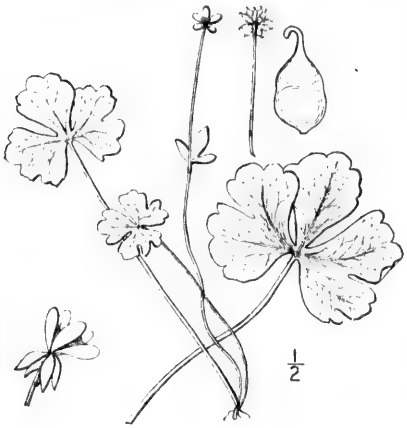
4. **Ranunculus hyperbòreus** Rottb. Arctic Buttercup. (Fig. 1598.)

Ranunculus hyperboreus Rottb. Skrift. Kjoeb. Selsk. 10: 458. 1770.

Stem slender, glabrous, filiform, creeping, 2′–6′ long. Leaves petioled, 3-lobed or cleft, broadly ovate, 2″–5″ broad, 2″–4″ long, obtuse, the base cuneate or rounded, the lobes oblong, obtuse, the lateral ones sometimes toothed; petioles sheathing and biauriculate; flowers few, 2″–3″ broad, yellow; petals slightly shorter than the reflexed sepals; peduncles 4″–6″ long; head of fruit globose, 2″ broad; achenes slightly compressed, with a minute blunt point.

Labrador, arctic America, Iceland, northern Europe and Siberia. Summer.

5. **Ranunculus Lappónicus** L. Lapland Buttercup. (Fig. 1599.)



Ranunculus Lapponicus L. Sp. Pl. 553. 1753.

Anemone nudicaulis A. Gray, Coult. Bot. Gaz. 11: 17. 1886.

Scapose from running rootstocks, 3′–6′ high. Basal leaves long-petioled, the blade 1′–1½′ broad, reniform, 3-parted, the divisions broadly obovate, cuneate, obtuse, crenate or lobed; scape 1-flowered, slender, longer than the leaves, occasionally bearing a single deeply lobed leaf; flower 3″–5″ broad, yellow; petals 5–6; sepals generally fewer and reflexed; head of fruit globose, 6″ broad; achenes flattened, ovate, gradually narrowed into a slender hooked beak.

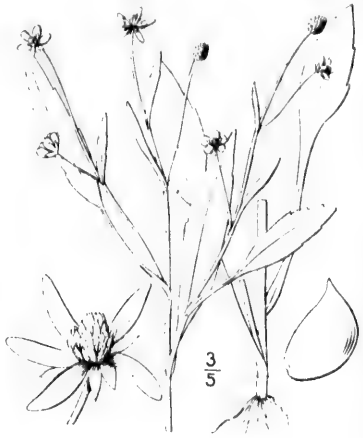
Lake Nipigon and Thunder Bay, Lake Superior, northern Minnesota, western arctic America, and in northern Europe and Siberia. Summer.

6. Ranunculus pusillus Poir. Low Spearwort. (Fig. 1600.)

Ranunculus pusillus Poir. in Lam. Encycl. 6: 99. 1804.

Annual, slender, weak, glabrous, branching, 6′–12′ high. Leaves entire or denticulate, the lower oblong or ovate, on long petioles, the upper narrower, lanceolate or linear, short-petioled or sessile; flowers yellow, 2″–3″ broad, the petals few, often barely exceeding the sepals; stamens 1–10; head of fruit globose, 2″ broad; achenes beakless, merely tipped by the persistent style-base.

Marshes, southern New York and New Jersey near the coast, Bucks and York counties, Pa., south to Florida and west through the Gulf States to Texas and Missouri. April–July.



7. Ranunculus oblongifòlius Ell. Oblong-leaved Spearwort. (Fig. 1601.)

Ranunculus oblongifolius Ell. Bot. S. C. & Ga. 2: 58. 1821–24.

Ranunculus pusillus var. *oblongifolius* T. & G. Fl. N. A. 1: 16. 1838.

Annual, branched above, erect or ascending, 1°–1½° high, glabrous or pubescent. Leaves entire or denticulate, oblong, or oblong-lanceolate, the lower on long petioles, the blade sometimes 3′ long, the upper narrower, lanceolate or linear; flowers yellow, 5″–6″ broad, the 5 petals much exceeding the sepals; stamens numerous; head of fruit 2″ broad; achenes merely tipped by the style-base.

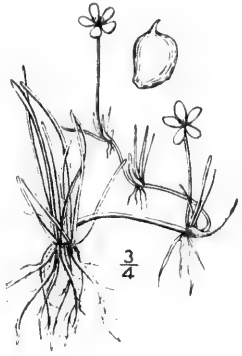
In swamps, southern Virginia, southern Illinois and Missouri, south to Florida and Texas. April–Sept.

8. Ranunculus réptans L. Creeping Spearwort. (Fig. 1602.)

Ranunculus reptans L. Sp. Pl. 549. 1753.
Ranunculus filiformis Michx. Fl. Bor. Am. 1: 320. 1803.
Ranunculus Flammula var. *reptans* E. Meyer. Pl. Lab. 96. 1830.

Trailing or reclining, glabrous or pubescent, rooting from the nodes, the flowering stems and peduncles ascending. Leaves linear, lanceolate or spatulate, 1′–2′ long, mainly entire, gradually narrowed into the petiole; flowers bright yellow, 4″–5″ broad, solitary on peduncles 1′–3′ long, petals 4–7, much exceeding the calyx; achenes flattish, with a minute sharp beak; stamens numerous.

On shores, Newfoundland and arctic America, south to New Jersey, Pennsylvania and Michigan, and in the Rocky Mountains to Colorado. Also in Europe and Asia. Summer.



Ranunculus réptans intermèdius (Hook.) T. & G. Fl. N. A. 1: 16. 1838.

Ranunculus Flammula var. *intermedius* Hook. Fl. Bor. Am. 1: 11. 1829.

Larger; leaves longer and wider, 3′–5′ long, 2″–3″ wide. Newfoundland to the shores of the Great Lakes, and Oregon. The European *R. Flammula* has not been found in America.

9. Ranunculus obtusiúsculus Raf. Water Plantain Spearwort. (Fig. 1603.)

Ranunculus obtusiusculus Raf. Med. Rep. (II.) 5: 359. 1808.

Ranunculus alismaefolius A. Gray, Man. Ed. 5, 41. 1867. Not Geyer, 1848.

Ranunculus ambigens S. Wats. Bibliog. Index, 1: 16. 1878.

Stout, 1°–3° high, ascending, glabrous, rooting from the lower nodes; stem hollow, sometimes nearly 1′ thick at the base. Leaves lanceolate or oblong-lanceolate, 3′–6′ long, 5″–12″ wide, denticulate or entire, all but the uppermost on broad petioles, which clasp the stem by a broad base; flowers yellow, panicled, 6″–8″ broad; petals 5–7, much exceeding the sepals; head of fruit globose or slightly elongated, 5″–6″ in diameter; achenes compressed, ½″ long, subulate-beaked, but the beak early deciduous.

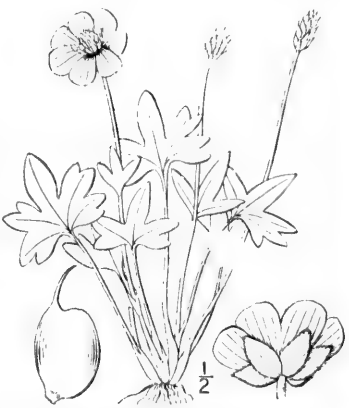
Marshes, Maine and Ontario to Georgia, west to Minnesota and Missouri. June–Aug.

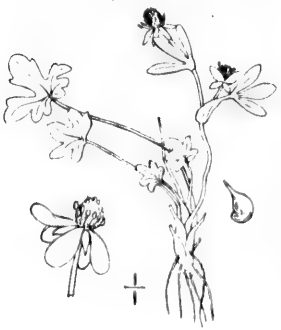
10. Ranunculus nivàlis L. Snow Buttercup. (Fig. 1604.)

Ranunculus nivalis L. Sp. Pl. 553. 1753.

Stem simple, 4′–12′ high. Basal leaves long-petioled, 3–7-lobed, or crenate, thick, glabrous, the blade about 1′ broad, those of the stem short-petioled or sessile, deeply lobed; flowers solitary, 6″–9″ broad, white or light yellow; calyx nearly half the length of the petals, densely black or brown hairy all over, as is the upper part of the peduncle; head of fruit oblong, 6″ long; achenes tipped with the subulate style.

Labrador and arctic America generally; also in northern Europe and Asia. Summer.





11. Ranunculus pygmaèus Wahl. Pigmy Buttercup. (Fig. 1605.)

Ranunculus pygmaeus Wahl. Fl. Lapp. 157. 1812.

Small, 1′–2′ high, glabrous or sparsely pubescent. Basal leaves slender-petioled, deeply 3–5-lobed or divided, the blade 3″–6″ wide; those of the stem similar and nearly sessile; flowers yellow, 2″–3″ wide, the petals slightly exceeding the sepals; head of fruit short-oblong, 2″ long; achenes ½″ long, lenticular, tipped with a slender beak.

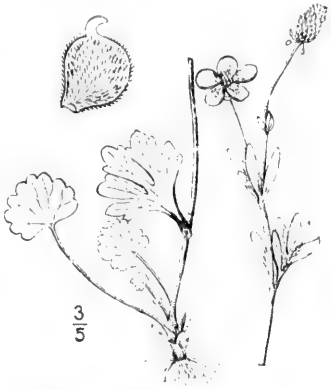
Labrador, arctic America, and in the Rocky Mountains. Also in Europe and Asia.

12. Ranunculus pedatifidus J. E. Smith. Northern Buttercup. (Fig. 1606.)

Ranunculus pedatifidus J. E. Smith in Rees' Cyclop. no. 72. 1813–16.
R. affinis R. Br. in Parry's Voy. App 265. 1823.

Erect, 4′–12′ high, branching. Basal leaves petioled, broadly ovate or nearly orbicular, about 1′ broad, obtuse, crenate or often lobed, those of the stem deeply lobed, nearly sessile, the lobes narrow, obtuse; flowers yellow, 6″–8″ broad, the petals exceeding the spreading pubescent calyx; head of fruit oblong, 3″–6″ long; achenes oval, tipped with a short beak, often hairy.

Labrador and Quebec to Alaska, south in the Rocky Mountains to Arizona. Also in northern Asia. Summer.



Ranunculus pedatifidus cardiophýllus (Hook.) Britton, Bull. Torr. Club, **18**: 265. 1891.
R. cardiophyllus Hook. Fl. Bor. Am. **1**: 14. 1829.

Basal leaves broadly ovate or orbicular, crenate or slightly lobed; flowers larger; calyx tomentose. Labrador to British Columbia, south to Quebec, South Dakota and in the Rocky Mountains to Arizona (?). Perhaps a distinct species.

13. Ranunculus ovàlis Raf. Prairie Crowfoot. (Fig. 1607.)

Ranunculus ovalis Raf. Proc. Dec. 36. 1814.
Ranunculus rhomboidens Goldie, Edinb. Phil. Journ. **6**: 329. 1822.

Pubescent, branching, 6′–18′ high. Lower and basal leaves oval, oblong, or ovate-oblong, long-petioled, the blade 1′ in length or more, crenate or slightly lobed, obtuse, the base more or less cuneate; upper cauline leaves sessile or short petioled, deeply divided into 3–7 linear or oblong obtuse lobes; flowers yellow, 9″–12″ broad, the petals narrow and much exceeding the calyx; head of fruit spherical; carpels and achenes oval or orbicular, minutely beaked.

In fields and on prairies, Labrador and Ontario to the Northwest Territory, Illinois and Wisconsin. March–May.

14. Ranunculus Hàrveyi (A. Gray) Britton. Harvey's Buttercup. (Fig. 1608.)

Ranunculus abortivus var. *Harveyi* A. Gray, Proc. Am. Acad. **21**: 372. 1886.
Ranunculus Harveyi Britton, Mem. Torr. Club, 5: 159. 1894.

Glabrous, stem erect, slender, branched, 8′–18′ tall. Leaves thin, the basal and lower ones long-petioled, reniform or suborbicular, obtusely crenate or somewhat lobed, 5″–18″ wide, cordate, or some of them truncate at the base, the upper sessile or nearly so, deeply 3-cleft or 3-parted into linear or narrowly oblong entire or few-toothed obtuse segments; flowers bright yellow, 6″–9″ broad; petals 4–8, oblong, 4 or 5 times as long as the reflexed sepals; head of fruit globose, 2″ in diameter; achenes oblique, compressed, tipped with a minute straight style.

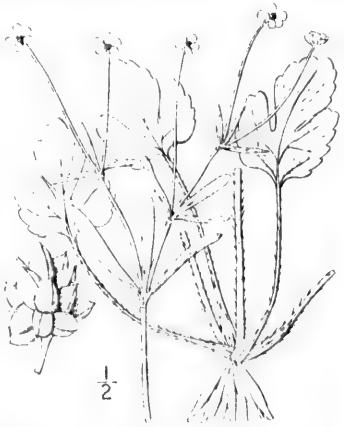
On dry hillsides, Missouri and Arkansas. April–May.

15. Ranunculus abortivus L. Kidney-leaved Crowfoot. (Fig. 1609.)

Ranunculus abortivus L. Sp. Pl. 551. 1753.

Glabrous, or but sparingly pubescent, 6′–2° high, branched. Basal leaves long-petioled, bright green, thick, crenate or sometimes lobed, broadly ovate, obtuse, and generally cordate or reniform, the cauline sessile or nearly so, divided into oblong or linear somewhat cuneate lobes; head of fruit globose, the receptacle short, pubescent; flowers yellow, 2″–3″ broad, the petals oblong, shorter than the reflexed calyx; achenes tipped with a minute curved beak.

In woods and moist grounds, Labrador and Nova Scotia to Manitoba, south to Florida, Arkansas and Colorado. April–June.



16. Ranunculus micránthus Nutt. Rock Crowfoot. (Fig. 1610.)

Ranunculus micranthus Nutt.; T. & G. Fl. N. A. 1: 18. 1838.
Ranunculus abortivus var. *micranthus* A. Gray, Man. Ed. 5, 42. 1867.

Similar to the preceding species but usually smaller, villous with spreading hairs, flowering when very young, 6′–18′ tall. Leaves thin, dull green, the basal ones ovate or suborbicular, 3-lobed or crenate, narrowed, rounded or subcordate at the base; segments of the upper leaves narrow, entire or sharply toothed; flowers yellow, about 3″ broad; sepals narrowed into a short claw; petals oblong or oval, 2–3 times as long as wide; head of fruit rather longer than thick, the receptacle linear, glabrous or very nearly so.

In rich woods, often on rocks, range apparently nearly that of *R. abortivus*. In New York it blooms somewhat earlier than that species. Roots tuberous. April–May.

17. Ranunculus Alleghaniénsis Britton. Mountain Crowfoot. (Fig. 1611.)

Ranunculus Alleghaniensis Britton, Bull. Torr. Club, 22: 224. 1895.

Similar in aspect to *R. abortivus* and *R. micranthus*, glabrous, stem widely branched, 1°–2° tall. Basal leaves reniform or suborbicular, 6″–2′ wide, long-petioled, crenate or some of them lobed, the teeth and lobes su' acute; stem leaves sessile or the lower petioled, divided nearly or quite to the base into linear acute entire toothed or cleft segments; flowers about 3″ broad; petals oblong, not exceeding the calyx, yellow, glandular; head of fruit globose or globose-oblong, 2″ in diameter; achenes slightly compressed and margined, tipped with subulate hooked or recurved styles of about one-half their length.

Mountains of Virginia and North Carolina to the Catskills, and eastern Massachusetts. April–May.

18. Ranunculus sceleràtus L. Celery-leaved or Ditch Crowfoot. (Fig. 1612.)

Ranunculus sceleratus L. Sp. Pl. 551. 1753.

Stout, glabrous, or nearly so, 6′–2° high, freely branching, stem hollow. Basal leaves thick 3–5-lobed, on long and broad petioles, the blade 1′–2′ broad, reniform or cordate, those of the stem petioled or the upper sessile, deeply lobed or divided, the lobes obtuse, cuneate-oblong or linear, several-toothed or entire; flowers yellow, numerous, 3″–4″ broad, the petals about equalling the calyx; head of fruit oblong or cylindric, 4″–6″ long; achenes ½″ long, very numerous, merely apiculate.

In swamps and wet ditches, New Brunswick to Florida, abundant along the coast, and locally westward to Minnesota, preferring saline or alkaline situations. Also in Europe and Asia. Stem sometimes 1½′ thick. April–Aug.

19. Ranunculus recurvàtus Poir. Hooked Crowfoot. (Fig. 1613.)

Ranunculus recurvatus Poir. in Lam. Encycl. 6: 125. 1804.

Erect, 6′–2° high, usually hirsute, branching. Leaves all petioled, broadly reniform, 2′–3′ wide, deeply 3-cleft, the divisions broadly cuneate, acute, toothed and lobed; flowers light yellow, 4″–5″ broad, the petals shorter than or equalling the reflexed calyx; head of fruit globose, 6″ wide; achenes compressed, margined, tipped with a recurved hooked beak of one-half their length.

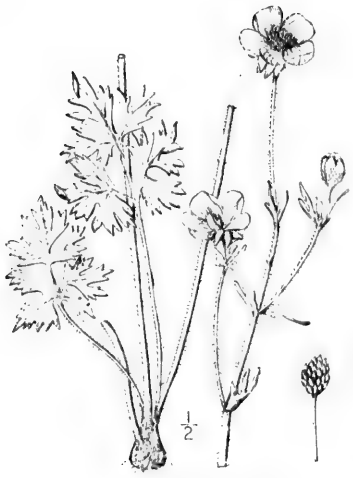
In woods, Nova Scotia to Manitoba, south to Florida and Missouri. Ascends to 4200 ft. in North Carolina. April–June.

20. Ranunculus àcris L. Tall or Meadow Buttercup. (Fig. 1614.)

Ranunculus acris L. Sp. Pl. 554. 1753.

Erect, hairy, branched above, 2°–3° high; roots fibrous. Basal leaves tufted, petioled, 3–7-divided, the divisions sessile and cleft into numerous narrow mainly acute lobes; upper leaves short-petioled and merely 3-parted, distant; flowers numerous, bright yellow, about 1′ broad; petals twice or thrice the length of the spreading calyx, obovate; head of fruit globose, 6″–7″ broad; achenes compressed, short-beaked.

In fields and meadows, common, especially in the Northern States and Canada. Naturalized from Europe. Stem sometimes nearly glabrous. May–Sept.

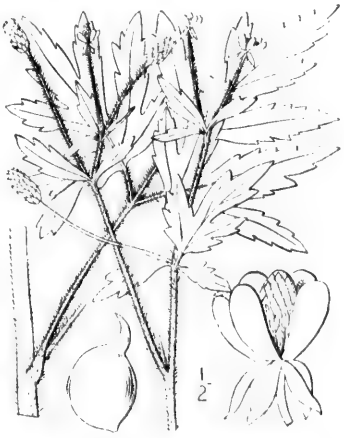


21. Ranunculus bulbòsus L. Bulbous Buttercup. (Fig. 1615.)

Ranunculus bulbosus L. Sp. Pl. 554. 1753.

Erect from a bulbous-thickened base, hairy, 6′–18′ high. Leaves petioled, 3-divided, the terminal division stalked, the lateral ones sessile or nearly so, all variously lobed and cleft, flowers bright yellow, about 1′ broad; petals much longer than the reflexed sepals, obovate, rounded; head of fruit globose, 5″–6″ broad; achenes compressed, very short-beaked.

In fields and along roadsides, quite common in most sections of our area. Naturalized from Europe. May–June. In England the name Buttercups is chiefly applied to this species and to *R. repens* and *R. acris;* called also in middle English Kingcups, Goldcups, Butter-flowers and Blister-flowers. May–July.



22. Ranunculus Pennsylvánicus L. f. Bristly Buttercup. (Fig. 1616.)

Ranunculus Pennsylvanicus L. f. Suppl. 272. 1781.

Erect, branching, pilose-hispid, 1°–2° high, leafy. Leaves thin, 3-divided; divisions deeply 3-cleft, the lobes lanceolate, cuneate, acute, incised; flowers yellow, 3″–4″ wide; petals equalling the reflexed sepals or shorter; head of fruit oblong or cylindric (3″ thick, sometimes 6″ long); achenes smooth, pointed with a sharp beak one-third their length; receptacle hairy.

In wet, open places, Nova Scotia to Georgia and west to the Rocky Mountains and British Columbia. June–August.

23. Ranunculus Macòunii Britton. Macoun's Buttercup. (Fig. 1617.)

Ranunculus hispidus Hook. Fl. Bor. Am. 1: 19. 1829. Not Michx. 1803.

Ranunculus Macounii Britton, Trans. N. Y. Acad. Sci. 12: 3. 1892.

Erect or diffuse, hairy, branching, 1°–2° high. Leaves 3-divided, the blade 2′–3′ long, the divisions broadly oblong, acute, cuneate, variously cleft and lobed; flowers 5″–6″ broad, yellow, the petals exceeding the spreading or slightly reflexed calyx; head of fruit oblong, 4″ thick; achenes smooth, pointed with a sharp beak about one-fourth their length.

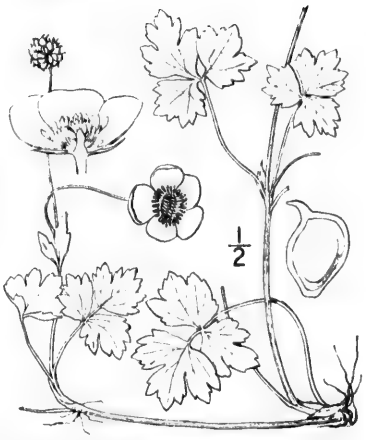
Western Ontario, Minnesota and Iowa west to the Pacific Coast, extending south in the Rocky Mountains to Arizona. Our description probably includes more than one species. Summer.

24. Ranunculus rèpens L. Creeping Buttercup. (Fig. 1618.)

Ranunculus repens L. Sp. Pl. 554. 1753.

Generally hairy, sometimes only slightly so, spreading by runners and forming large patches. Leaves petioled, 3-divided, the terminal division, or all three stalked, all ovate, cuneate or truncate, acute, cleft and lobed, often blotched; flowers nearly 1′ broad; petals obovate, much exceeding the spreading sepals; head of fruit globose, 4″ in diameter; achenes margined, tipped with a stout short slightly bent beak.

Fields and roadsides, frequent from Nova Scotia to Virginia and locally in the interior. Mainly introduced from Europe; possibly indigenous in some districts. May–July.



25. Ranunculus septentrionàlis Poir. Swamp or Marsh Buttercup. (Fig. 1619.)

Ranunculus septentrionalis Poir. in Lam. Encycl. 6: 125. 1804.

Roots simply fibrous; plant branching, 1°–3° high, glabrous, or sometimes pubescent, the later branches procumbent and sometimes rooting at the nodes. Leaves large, petioled, 3-divided; divisions mostly cuneate at the base, cleft into broad lobes; lower petioles occasionally a foot long; flowers 1′ in diameter or more, bright yellow; petals obovate, twice the length of the spreading sepals; head of fruit globose or oval, 4″ in diameter; achenes flat, strongly margined, subulate-beaked by the stout sword-shaped style which is of nearly their length and often early deciduous.

Mainly in swamps and low grounds, New Brunswick to Manitoba, south to Georgia and Kentucky. April–July.

26. Ranunculus hìspidus Michx. Hispid Buttercup. (Fig. 1620.)

R. hispidus Michx. Fl. Bor. Am. 1: 321. 1803.

Densely villous when young, sometimes merely appressed-pubescent or glabrate when old; stems ascending or spreading, 8′–2° long; plant not stoloniferous; roots a cluster of thickened fibres. Leaves pinnately 3–5-divided, the divisions ovate, oblong or obovate, narrowed or cuneate at the base, sharply cleft or lobed, usually thin; flowers 6″–18″ broad; petals about twice as long as the spreading sepals; head of fruit globose-oval or globose; achenes broadly oval, lenticular, narrowly margined, abruptly tipped by a subulate style of about one-half their length.

In dry woods and thickets, Ontario to the Northwest Territory, south to Georgia and Arkansas. The earliest flowering Buttercup of the vicinity of New York. Ascends to 6000 ft. in North Carolina. March–May.

27. Ranunculus fasciculàris Muhl. Early or Tufted Buttercup. (Fig. 1621.)

Ranunculus fascicularis Muhl. Cat. 54. 1813.

Pubescent; fibrous roots thickened; plant generally low, 6′–12′ high, tufted. Leaves petioled, 3–5-divided; divisions stalked (especially the terminal one), deeply lobed and cleft, the lobes oblong or linear; flowers about 1′ broad; petals yellow, obovate, much longer than the spreading sepals, rounded, truncate or even emarginate; head of fruit globose, about, 4″ in diameter; achenes flat, slightly margined, beaked with the subulate persistent style which is nearly or quite their length.

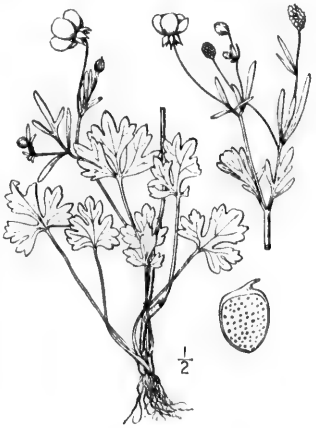
Woods, Ontario and New England to North Carolina, west to Manitoba and Texas. April–May.

28. Ranunculus párvulus L. Hairy Buttercup. (Fig. 1622.)

Ranunculus parvulus L. Mant. 1: 79. 1767.
Ranunculus Philonotis Retz, Obs. 6: 31. 1791.

Erect, hairy, 6′–15′ high, branching. Basal and lower leaves broad-petioled, the blade about 2′ broad and long, 3-divided or cleft, the divisions broadly ovate, cuneate, stalked, cleft and lobed, the upper sessile or nearly so, deeply cleft into linear-oblong obtuse segments; flowers yellow, 10″–15″ broad; petals much exceeding the reflexed calyx; head of fruit oblong, 2″–3″ thick; achenes flat, strongly margined, short-beaked, provided with a series of small tubercles or papillae which become more prominent in drying, or rarely nearly smooth.

In ballast grounds and waste places, St. John, N. B.; vicinity of New York and of Philadelphia, Norfolk, and in the Southern States. Fugitive from Europe. Summer.



29. Ranunculus parviflòrus L. Small-flowered Crowfoot. (Fig. 1623.)

Ranunculus parviflorus L. Sp. Pl. Ed. 2, 780. 1763.

Hairy, slender, diffuse, branching from the base, 6′–10′ high. Basal leaves long-petioled, the blade reniform or cordate-orbicular, 1′ broad or less, 3-cleft, the lobes broadly oval, obtuse, cut and toothed; upper leaves short-petioled or nearly sessile, 3–5-parted into linear-oblong lobes; flowers yellow, 1″–2″ wide, the petals not longer than the calyx; head of fruit globose, 2″ broad; achenes flat, margined, densely papillose, 1½″ long, tipped with a sharp beak of about one-fourth their length.

In waste places, Maryland and eastern Virginia to Florida, Arkansas and Texas, and in ballast grounds about the northern seaports. Naturalized or fugitive from Europe. Also naturalized in Bermuda. Summer.

30. Ranunculus muricàtus L. Spiny-fruited Crowfoot. (Fig. 1624.)

Ranunculus muricatus L. Sp. Pl. 555. 1753.

Glabrous or sparingly pubescent, branched from the base, 1°–2° high. Lower and basal leaves on long broad petioles, the blade reniform or cordate-orbicular, 1′–2′ wide, 3-lobed, cleft, or crenate; the upper 3-divided, cuneate, short-petioled or sessile; flowers light yellow, 3″–5″ wide, the petals exceeding the calyx; head of fruit globular, 5″–6″ wide; achenes flat, densely muricate and spiny on the sides, 2″ long, tipped with a stout slightly curved beak of one-half their length.

Waste places, eastern Virginia and southward, naturalized or fugitive from Europe. Also on the Pacific Coast. Native also in Asia and naturalized in tropical America. Summer.

31. Ranunculus arvénsis L. Corn Crowfoot. Hunger-weed. (Fig. 1625.)

Ranunculus arvensis L. Sp. Pl. 555. 1753.

Erect, glabrous or sparingly pubescent, branched above, 1° or more high. Lower leaves petioled, the upper sessile, all deeply cleft or divided into linear-oblong, obtuse cuneate, lobed or toothed segments or the lowest entire; flowers 6″–8″ broad, pale yellow, the petals exceeding the sepals; achenes 4–8, flattened, margined, spiny-tuberculate on the sides, 2″ long, tipped with a subulate beak more than one-half their length.

In waste grounds, Tom's River and Passaic, N. J., and in ballast about the northern seaports. Fugitive from Europe, where it is abundant in grain-fields. Called Hunger-weed because supposed to indicate, when prevalent, a poor crop and consequent want. Summer.

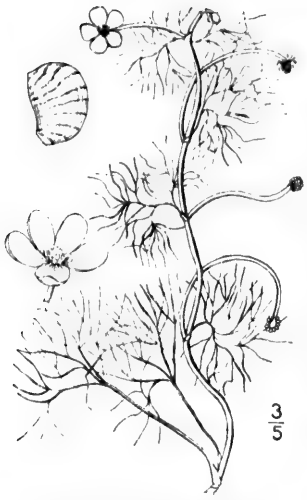
23. BATRÀCHIUM S. F. Gray, Nat. Arr. Brit. Pl. 2: 720. 1821.

Perennial aquatic or ditch herbs, with alternate dissected or palmately lobed leaves, the segments of the submerged ones often filiform, and solitary rather small white flowers, borne on peduncles opposite the leaves. Sepals and petals usually 5. Petals oblong or oval, the base sometimes yellowish, the claw bearing a small pit. Stamens several or numerous. Achenes oblique, compressed, not margined, nearly or quite beakless, tranversely wrinkled. [Greek, referring to the aquatic habitat.]

About 20 species of very wide geographic distribution. Besides the following, 3 others occur in northwestern North America.

Leaves all dissected into filiform segments and lobes.
- Leaves 1′–2′ long, flaccid, collapsing when taken from the water. 1. *B. trichophyllum.*
- Leaves 1′ long or less, rigid when taken from the water. 2. *B. divaricatum.*

Leaves all reniform or broadly ovate, 3–5-lobed, 5″–10″ wide. 3. *B. hederaceum.*



1. **Batrachium trichophýllum** (Chaix) Bossch. White Water-Crowfoot. (Fig. 1626.)

Ranunculus trichophyllus Chaix in Vill. Hist. Pl. Dauph. 1: 335. 1786.

Batrachium trichophyllum Bossch, Prodr. Fl. Bat. 5. 1850.

Ranunculus aquatilis var. *trichophyllus* A. Gray, Man. Ed. 5, 40. 1867.

Ranunculus aquatilis var. *caespitosus* DC. Prodr. 1: 26. 1824.

Submerged; stems branching, usually 1° long or more. Leaves petioled, 1′–2′ long, flaccid and collapsing when withdrawn from the water, repeatedly forked into capillary divisions; flowers white, 6″–9″ broad, on stout peduncles 1′–2′ long, blooming at the surface of the water; head of fruit globose, 2″ broad; receptacle hairy; achenes apiculate but beakless.

In ponds and streams, Nova Scotia to British Columbia, south to North Carolina and California. Also in Europe and Asia. A variable species. The so-called var. *caespitosus* is a small mud form. June–Sept.

2. **Batrachium divaricàtum** (Schrank) Wimm. Stiff White Water-Crowfoot. (Fig. 1627.)

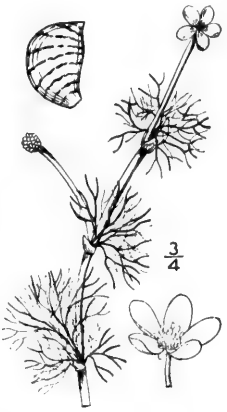
Ranunculus divaricatus Schrank, Baier. Fl. 2: 104. 1789.

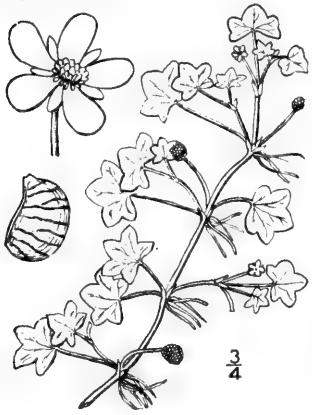
Ranunculus circinatus Sibth.; J. E. Smith, Fl. Brit. 2: 596. 1800.

Ranunculus aquatilis var. *divaricatus* A. Gray, Man. Ed. 2, 7. 1856.

Similar to the preceding species, but the leaves are shorter, less than 1′ long, spreading nearly at right angles from the stem, rigid when withdrawn from the water and nearly sessile; there appear to be no constant differences in flower or fruit.

In ponds and slow streams, Ontario, New England, northern New Jersey and Pennsylvania, and west to the Pacific Coast, extending south in the Rocky Mountains to Arizona. Also in Europe. Summer.





3. **Batrachium hederàceum** (L.) S. F. Gray. Ivy-leaved Crowfoot. (Fig. 1628.)

Ranunculus hederaceus L. Sp. Pl. 556. 1753.

Batrachium hederaceum S. F. Gray, Nat. Arr. Brit. Pl. 2: 721. 1821.

Semi-aquatic, rooting extensively at the joints, branching, entirely glabrous. Leaves floating, or spreading on the mud, semi-circular or broadly ovate in outline, 3–5 lobed, 3″–6″ long, 5″–10″ broad, the lobes obtuse; flowers white, 2″–3″ broad; head of fruit globose, 2″ wide; achenes rugose, minutely beaked.

In ponds and pools, Newfoundland and southeastern Virginia. Naturalized from Europe. June–Aug.

24. FICÀRIA Huds. Fl. Angl. 213. 1762.

Glabrous slightly fleshy perennial herbs, with thickened tuberous roots, branched or simple spreading or erect stems, petioled entire or toothed cordate leaves, and large solitary yellow terminal or axillary flowers. Sepals 3 or sometimes 5, deciduous. Petals 7–12 (commonly 8), yellow, or red at the base, bearing a small pit at the base of the blade (?). Stamens and pistils numerous. Achenes slightly compressed, blunt, not wrinkled nor ribbed. Cotyledon only one. [Latin, fig, from the fig-like thickened roots.]

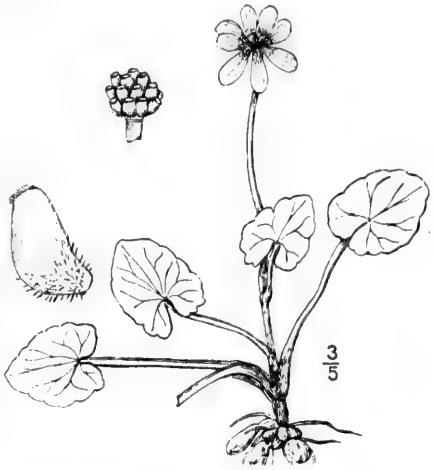
About 4 species, natives of the Old World.

1. Ficaria Ficària (L.) Karst. Lesser Celandine. (Fig. 1629.)

Ranunculus Ficaria L. Sp. Pl. 550. 1753.
Ficaria ranunculoides Moench, Meth. 215. 1794.

Glabrous, flowering stems scapose, 4′–5′ high, bearing 1 or 2 leaves or naked, erect from large fleshy thickened roots. Leaves ovate, cordate, obtuse, crenate, somewhat fleshy, on broad petioles, the blade 1′–2′ long; flowers yellow, 1′ broad; sepals 3; petals 8 or 9; head of fruit globose, ½′ broad; carpels beakless, truncate.

College Point, Long Island; Staten Island; Philadelphia. Fugitive from Europe, where it is a common pasture weed, occurring also in western Asia. Called also Pilewort and Figwort Buttercup. April–May.



25. CYRTORHÝNCHA Nutt.; T. & G. Fl. N. A. 1: 26. 1838.

A glabrous perennial herb, with fibrous roots, slender erect stems, crenate or lobed leaves, and small yellow flowers. Sepals 5, spreading, deciduous. Petals 5, narrowly spatulate or oblong, bearing a small pit near the base. Stamens and pistils numerous. Head of fruit globose. Achenes terete, longitudinally ribbed or nerved, tipped with the incurved style. [Greek, curved-beak.]

The genus as here recognized consists of the following species only.

1. Cyrtorhyncha ranuncùlina Nutt. Nuttall's Buttercup. (Fig. 1630.)

Cyrtorhyncha ranunculina Nutt.; T. & G. Fl. N. A. 1: 26. 1838.
Ranunculus Nuttallii A. Gray, Proc. Acad. Phila. 1863: 56. 1863.
Ranunculus ranunculinus Rydberg, Bot. Surv. Neb. 3: 23. 1894.

Slender, glabrous, erect, branched above, 6′–10′ high. Roots thick and clustered, numerous; basal leaves on long slender petioles, bipinnate, the divisions deeply parted into oblong or linear, entire or dentate, acutish lobes; stem-leaves few, subtending the branches, ternately or pinnately parted into linear lobes; flowers few, somewhat corymbose, about 6″ broad; sepals yellow, petaloid, spreading; petals spatulate; achenes 1″–1½″ long, capitate in a globose head, glabrous, oblong-cylindric, obtuse, striate, not flattened, tipped with the slender recurved style.

In gravelly soil, Nebraska, Wyoming and Colorado. June.

26. OXÝGRAPHIS Bunge, Verz. Suppl. Fl. Alt. 46. 1836.

Perennial herbs, with crenate dentate or lobed long-petioled leaves, and small yellow flowers, solitary or 2–7 together on scapes or scape-like peduncles. Sepals usually 5, spreading, tardily deciduous. Petals 5–12, each bearing a small nectar-pit near the base. Stamens and pistils numerous. Head of fruit oblong, oval or subglobose. Achenes compressed, sometimes swollen, longitudinally striate, without a hard coat. [Greek, sharp-style.]

About 10 species, the following of North America, Asia and southern South America, the others Asiatic.

1. Oxygraphis Cymbalària (Pursh) Prantl. Seaside Crowfoot. (Fig. 1631.)

Ranunculus Cymbalaria Pursh, Fl. Am. Sept. 392. 1814.
Oxygraphis Cymbalaria Prantl, in Engl. & Prantl, Nat. Pfl. Fam. 3: Abt. 2, 63. 1891.
Cyrtorhyncha Cymbalaria Britton, Mem. Torr. Club, 5: 161. 1894.

Low, glabrous, spreading by runners. Leaves mostly basal, slender-petioled, the blade cordate-oval or reniform, crenate, 2″–9″ long; flowers 1–7, about 3″–4″ broad, borne on scapes 1′–6′ long, these sometimes bearing one or more leaves toward the base; head of fruit oblong, 3″–8″ long; achenes compressed, somewhat swollen, distinctly striate, minutely sharp-pointed.

On sandy shores, Labrador to New Jersey, west along the St. Lawrence River and the Great Lakes to Minnesota and the Northwest Territory, and in saline soil throughout the western half of the continent, extending into Mexico. Plant somewhat fleshy. Also in Asia and South America. The so-called var. *alpina* is a small northern form. Summer.

27. THALÍCTRUM L. Sp. Pl. 545. 1753.

Erect perennial herbs. Leaves ternately decompound, basal and cauline, the latter alternate. Flowers perfect, polygamous or dioecious, generally small, greenish-white, paniced or racemed. Sepals 4 or 5. Petals none. Carpels commonly few, one-seeded, ribbed or nerved, stipitate or nearly sessile. Stamens ∞, exserted. [Derivation doubtful.]

A genus of about 75 species, most abundant in the north temperate zone, a few in the Andes of South America, India and South Africa. In addition to the species described below, about 8 others are North American, natives of the Southern States, the Rocky Mountains and the Pacific Coast.

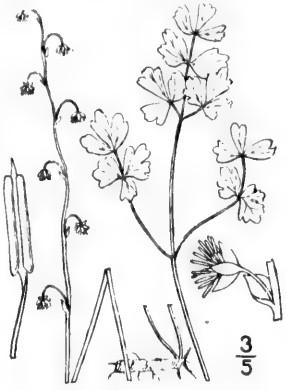
Flowers perfect.
- Stem simple, scape-like; achenes sessile; filaments slender. 1. *T. alpinum.*
- Stem branched, leafy; achenes long-stipitate; filaments petal-like. 2. *T. clavatum.*

Flowers dioecious or polygamous.
- Filaments filiform or slender, not wider than the anthers.
  - Flowers strictly dioecious.
    - Achenes terete; eastern species.
      - Leaflets thin, orbicular or broader; roots not yellow. 3. *T. dioicum.*
      - Leaflets thick, obovate or reniform; roots bright yellow. 4. *T. coriaceum.*
    - Achenes 2-edged; western species. 5. *T. venulosum.*
  - Flowers polygamous; leaflets usually glandular, or waxy. 6. *T. purpurescens.*
- Filaments spatulate, often wider than the anthers; plant not glandular. 7. *T. polygamum.*

1. Thalictrum alpìnum L. Arctic or Dwarf Meadow-Rue. (Fig. 1632.)

Thalictrum alpinum L. Sp. Pl. 545. 1753.

Smooth or slightly glandular, 1′–12′ high. Leaves small, tufted at the summits of scaly rootstocks, biternate; the scapiform stem leafless or 1-leaved near the base; leaflets cuneate-obovate or orbicular, firm, 3–5-lobed at the apex, margins revolute; panicle very simple, often racemose; flowers perfect; stamens about 10; filaments filiform, about equalling the sepals; anthers oblong-linear, mucronate; stigma linear; achenes 1½″ long, obliquely obovoid.



Anticosti, Newfoundland and arctic America generally. Also in the Rocky Mountains, and in Europe and Asia. Summer.

2. Thalictrum clavàtum DC. Mountain Meadow-Rue. (Fig. 1633.)

Thalictrum clavatum DC. Syst. 1: 171. 1818.

Glabrous, branching, 6′–24′ high. Leaves oval, ovate, or the terminal obovate-cuneate, basal and cauline, large, biternate; leaflets thin, stalked, with 3 main lobes and a few secondary ones, their margins not revolute; inflorescence cymose; flowers perfect; filaments spatulate and petal-like; anthers oblong, blunt; achenes spreading, equalling their stipes or longer, obliquely ovoid, narrowed at each end, flattened; stigma minute.

Mountains of Virginia and West Virginia to Alabama and Tennessee. May–June.

3. Thalictrum dioìcum L. Early Meadow-Rue. (Fig. 1634.)

Thalictrum dioicum L. Sp. Pl. 545. 1753.

Glabrous, erect, 1°–2° high, slender, leafy. Roots not yellow; leaves 3–4-ternate; leaflets thin, pale beneath, orbicular or broader, often cordate and the terminal one somewhat cuneate, 5–9-lobed; flowers dioecious, greenish, drooping or spreading; panicle elongated, of numerous lateral corymbs or umbels; filaments longer than the sepals; anthers linear, blunt, longer than the filaments; stigma elongated; achenes ovoid, sessile or minutely stipitate, deeply grooved, much longer than the style.

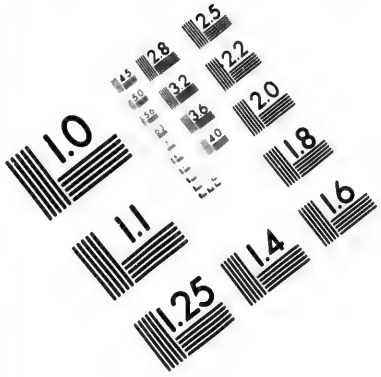
In woods, Labrador and Anticosti to Alabama, west to Saskatchewan and Missouri. Ascends to 4500 ft. in North Carolina. April–May.

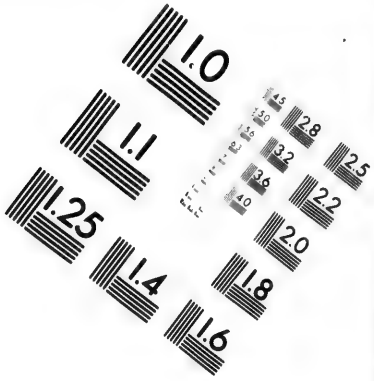
4. Thalictrum coriàceum (Britton) Small. Thick-leaved Meadow-Rue. (Fig. 1635.)

Thalictrum dioicum var. *coriaceum* Britton, Bull. Torr. Club, 18: 363. 1891.
Thalictrum coriaceum Small, Mem. Torr. Club, 4: 98. 1893.

Tall, 3°–5° high, the large rootstocks and roots bright yellow. Stem striate, paniculately branched above; leaves 3–4-ternate, short-petioled, the lower petioles expanded at the base into stipule-like appendages; leaflets obovate or reniform-orbicular, coriaceous, nearly white beneath, usually deeply and sharply incised, the veins prominent on the lower surface; flowers dioecious, the staminate nearly white, the anthers linear, subulate-tipped, longer than the filiform filaments; pistillate flowers purple; achenes oblong-ovoid, subacute, stalked, sharply ribbed, longer than the persistent style.

In open places, mountains of southwestern Virginia, North Carolina and Kentucky. May–June.





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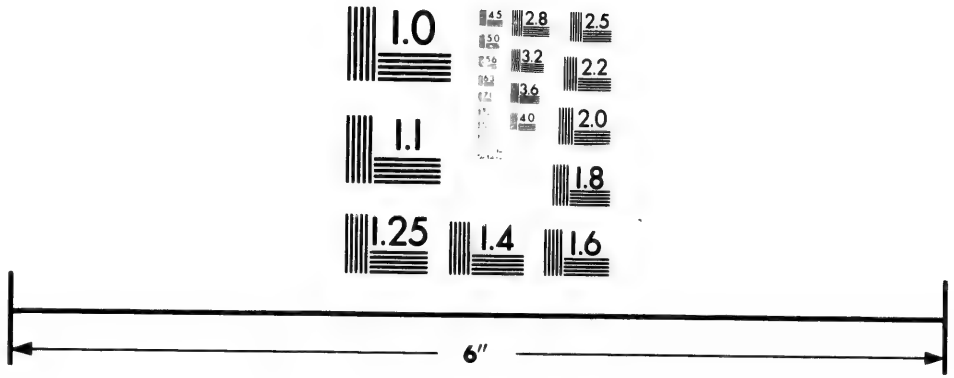

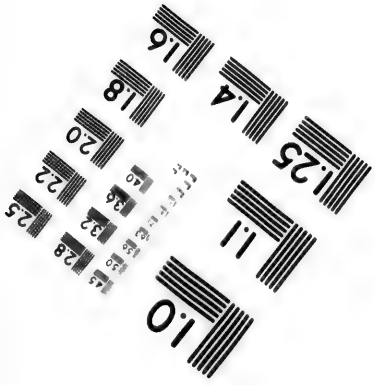

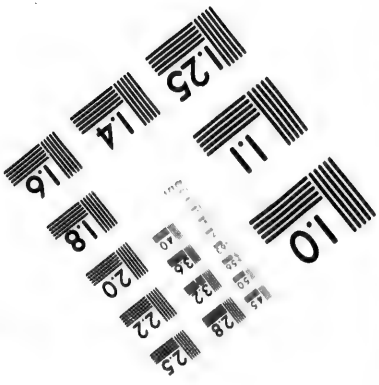

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5. Thalictrum venulòsum Trelease. Veiny Meadow-Rue. (Fig. 1636.)

Thalictrum venulosum Trelease, Proc. Bost. Soc. Nat. Hist. **23**: 302. 1886.
T. campestre Greene, Erythea, **4**: 123. 1896.

Glabrous, pale green and glaucous, stem purplish, erect, or assurgent at the base, 6′–2° tall. Leaves 3–4-ternate, long-petioled; leaflets firm, obovate or suborbicular, rounded at the apex, cuneate, obtuse or subcordate at the base, 4″–8″ long, 3–5-lobed, the lower surface rather prominently rugose-veined; panicle narrow, its branches nearly erect; flowers dioecious; stamens 8–20; filaments slender; anthers linear, slender-pointed; achenes ovoid, nearly sessile, tapering into a short beak, thick-walled, 2-edged.

In dry soil, Manitoba and South Dakota to the Northwest Territory and Washington, south to Colorado. May–June.

6. Thalictrum purpuráscens L. Purplish Meadow-Rue. (Fig. 1637.)

Thalictrum purpurascens L. Sp. Pl. 546. 1753.
Thalictrum purpurascens var. *ceriferum* Austin; A. Gray, Man. Ed. 5, 39. 1867.

Stout, erect, 4°–7° high, leafy, branching above, glandular, pubescent or even glabrous; leaves 3–4-ternate; leaflets thick, oblong or obovate, dark green above, commonly waxy beneath, with revolute margins, and 3 main apical pointed lobes; panicle compound, leafy, 1° long or more; flowers polygamous; filaments narrow, slightly widened above; anthers linear or linear-oblong, cuspidate; stigma linear, persistent; achenes ovoid, glabrous or pubescent, short-stipitate, with 6–8 longitudinal wings.

In copses and woodlands, Nova Scotia and Anticosti to Florida, west to the Saskatchewan and Arizona. Stems often purplish. Ascends to 6000 ft. in North Carolina. June–Aug.

7. Thalictrum polýgamum Muhl. Tall Meadow-Rue. (Fig. 1638.)

Thalictrum polygamum Muhl. Cat. 54. 1813.
Thalictrum Cornuti T. & G. Fl. N. A. **1**: 38. 1838. Not L. 1753.

Stout, 3°–11° high, branching, leafy, smooth or pubescent but not glandular nor waxy. Leaves 3–4-ternate; leaflets moderately thick, light green above and paler beneath, oblong, obovate or orbicular, with 3 main apical pointed or obtuse lobes; panicle compound, leafy, a foot long or more; flowers polygamous, white; filaments broadened; anthers oblong, short; achenes ovoid, stipitate, 6–8-winged, glabrous or pubescent.

Labrador and Quebec to Florida, west to Ohio. Its favorite habitat is in open sunny swamps, blooming one to four weeks later than *T. purpurascens*. The two species are easily distinguishable in the field; less easily in herbarium specimens, the characters being similar and variable. Ascends to 2500 ft. in Virginia.

28. ADÒNIS L. Sp. Pl. 547. 1753.

Erect, annual or perennial herbs. Leaves alternate, pinnately dissected into numerous linear segments. Flowers yellow or red, solitary, terminal. Petals 5–.o, conspicuous. Carpels ∞, 1-ovuled. Achenes capitate or spicate, tipped with the persistent styles. [Mythological name for a favorite of Venus, changed into a flower.]

A genus of showy-flowered plants, natives of the north temperate regions of Europe and Asia, consisting of the following and about five other species.

1. Adonis ánnua L. Pheasant's Eye. (Fig. 1639.)

Adonis annua L. Sp. Pl. 547. 1753.

Adonis autumnalis L. Sp. Pl. Ed. 2, 771. 1763.

Annual, erect, 1°–2° high, branched, glabrous. Leaves finely dissected, the lower petioled, the upper sessile, the segments acute; sepals smooth, deciduous; flowers 9″–18″ broad, nearly globular, orange or red, the petals obovate, and darker colored at the base; achenes spicate, rugose or angular.

Commonly cultivated for ornament; spontaneous in gardens and occasionally escaped into waste places, especially southward. Fugitive from Europe. Summer.

Family 27. BERBERIDÀCEAE T. & G. Fl. N. A. 1: 49. 1838.

BARBERRY FAMILY.

Shrubs or herbs, with alternate or basal, simple or compound leaves, with or without stipules, and solitary or racemed mostly terminal flowers. Sepals and petals generally imbricated in several series (2–many). Stamens as many as the petals and opposite them, hypogynous. Flowers perfect and pistil one in all our species. Anthers extrorse, opening by valves (except in *Podophyllum*). Style short; ovules 2–∞, anatropous. Fruit a berry or capsule.

About 20 genera and 105 species, widely distributed in the north temperate zone, the Andes and temperate South America, a few in tropical regions.

Shrubs; fruit baccate. — 1. *Berberis.*
Herbs.
  Anthers opening by valves.
    Pericarp early bursting, leaving two large naked stalked seeds, resembling berries. — 2. *Caulophyllum.*
    Fruit baccate; stamens 6. — 3. *Diphylleia.*
    Fruit capsular, half circumscissile. — 4. *Jeffersonia.*
  Anthers longitudinally dehiscent; fruit baccate; stamens 6–18. — 5. *Podophyllum.*

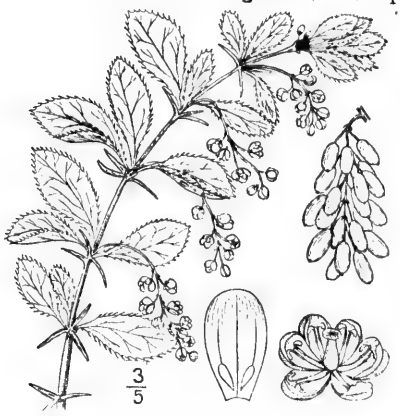
1. BÉRBERIS L. Sp. Pl. 330. 1753.

Shrubs with yellow wood, simple or compound often spiny leaves, and yellow racemose (rarely solitary) flowers. Sepals 6–9, petaloid, bracted. Petals 6, imbricated in 2 series, each with 2 basal glands. Stamens 6, irritable, closing around the stigma when shocked; anthers dehiscent by valves opening from the apex. Pistil 1; stigma peltate. Berry 1–few-seeded. [From the Arabic name.]

A genus of about 75 species, natives of North America, Europe, northern Asia and South America. Besides the following, about 10 others are found in the western parts of North America.

Leaves simple; racemes drooping; berries scarlet.
  Twigs ash-colored; racemes many-flowered; petals entire. — 1. *B. vulgaris.*
  Twigs dark brown; racemes few-flowered; petals notched. — 2. *B. Canadensis.*
Leaves pinnate; racemes erect; berries blue or purple. — 3. *B. Aquifolium.*

1. **Berberis vulgàris** L. European Barberry. (Fig. 1640.)



Berberis vulgaris L. Sp. Pl. 330. 1753.

A glabrous shrub, 6°–8° high, the branches arched and drooping at the ends, the twigs gray. Leaves alternate or fascicled, obovate or spatulate, unifoliolate, obtuse, thick, 1′–2′ long, bristly serrate, many of those on the young shoots reduced to 3-pronged spines, the fascicles of the succeeding year appearing in their axils; racemes terminating lateral branches, many-flowered, 1′–2′ long (3′–4′ in fruit); flowers yellow, 3″–4″ broad with a disagreeable smell; petals entire; berries oblong, scarlet when ripe, acid.

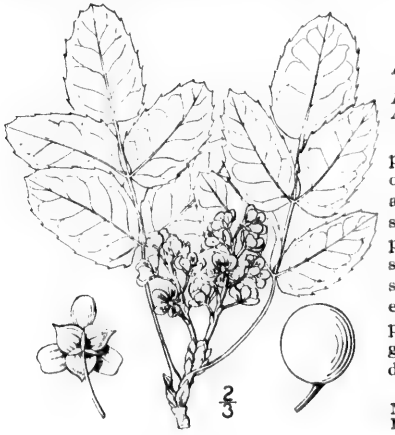
In thickets, naturalized from Europe in the Eastern and Middle States, adventive in Canada and the West. Native of Europe and Asia, running into numerous forms and varieties. Pepperidge-bush. May–June.

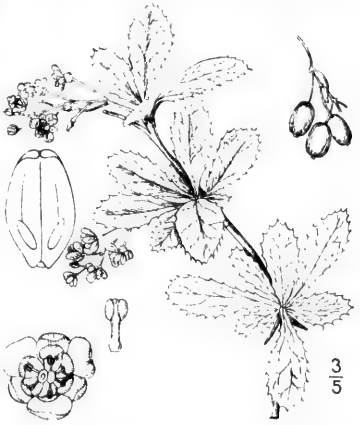
2. **Berberis Canadénsis** Mill. American Barberry. (Fig. 1641.)

Berberis Canadensis Mill. Gard. Dict. Ed. 8, no. 2. 1768.
Berberis vulgaris var. *Canadensis* Ait. Hort. Kew. 1: 479. 1789.

A shrub, 1°–6° high, with slender, reddish-brown branchlets. Leaves similar to those of *B. vulgaris*, but with more divergent and distant teeth, or sometimes nearly entire. Axillary spines 3-pronged; racemes few-flowered; petals conspicuously notched or emarginate at the apex; flowers about 3″ broad, berries scarlet, oval or subglobose.

In woods, mountains of Virginia to Georgia along the Alleghanies, and in Missouri. June. Referred by Regel to *B. Sinensis* Desf., as a variety. Readily distinguished from all forms of *B. vulgaris* by its dark-colored twigs.





3. **Berberis Aquifòlium** Pursh. Trailing Mahonia. (Fig. 1642.)

Berberis Aquifolium Pursh, Fl. Am. Sept. 219. 1814.
Berberis repens Lindl. Bot. Reg. *pl. 1176.* 1828.
Mahonia repens Don, Gard. Dict. 1: 118. 1831.

A low trailing glabrous shrub. Leaves petioled, pinnate; leaflets 3–7, ovate, oval, or nearly orbicular, obtuse or acute at the apex, oblique and obtuse, truncate or slightly cordate at the base, sessile, thick, persistent, finely reticulated, dentate with spine-bearing teeth, 1′–2′ long; racemes several, erect, dense, terminal, many-flowered; flowers yellow, 3″–4″ broad, short-pedicelled; bracts ovate, persistent; berry globose, blue or purple, about 3″ in diameter.

Western Nebraska and throughout the Rocky Mountain region, extending to Arizona and British Columbia. April–May.

1. CAULOPHÝLLUM Michx. Fl. Bor. Am. 1: 205. 1803.

Erect herbs, with thickened rootstocks, and ternately compound leaves. Sepals 6, the calyx 3-4-bracted. Petals 6, smaller, cucullate, opposite the sepals. Stamens 6; anthers oblong, dehiscent by valves. Pistil 1; style short; stigma lateral; ovules 2, ripening into large globose stipitate seeds, resembling berries, which in growth soon rupture the membranous caducous pericarp. [Greek, stem-leaf.]

1. Caulophyllum thalictroìdes (L.) Michx. Blue Cohosh. (Fig. 1643.)

Leontice thalictroides L. Sp. Pl. 312. 1753.

Caulophyllum thalictroides Michx. Fl. Bor. Am. 1: 205. 1803.

Glabrous, glaucous when young, 1°–3° high, with 2 or 3 large sheathing bracts at the base, a large triternate nearly sessile leaf near the summit, and generally a smaller similar one near the base of the inflorescence. Divisions of the leaves long-petioled, ternately or pinnately compound, the ultimate segments thin, 1′–3′ long, oval, oblong or obovate, 3–5-lobed near the apex; panicle terminal, 2′–3′ long; flowers greenish purple, 4″–6″ broad; seeds globular, 4″ in diameter, blue, glaucous, borne on stout stalks about 3″ long.

In woods, New Brunswick to South Carolina, west to Minnesota, Nebraska and Missouri. Ascends to 5000 ft. in North Carolina. April–May. Called also Papoose Root.

3. DIPHYLLEÌA Michx. Fl. Bor. Am. 1: 203. 1803.

Herbs with horizontal rootstocks, large peltate leaves, and cymose white flowers. Sepals 6, petaloid. Petals 6, flat. Stamens 6; anthers dehiscent by valves Pistil 1; ovules few, arranged in 2 rows. Fruit a berry. Seeds oblong, curved. [Greek, double-leaf.]

A genus of 2 species, one native of eastern North America, the other of Japan.

1. Diphylleia cymòsa Michx. Umbrella-leaf. (Fig. 1644.)

Diphylleia cymosa Michx. Fl. Bor. Am. 1: 203. 1803.

Erect, stout, 1°–2° high, glabrous or nearly so. Basal leaves solitary, long-petioled, 1°–2° in diameter, peltate near the centre, deeply 2-cleft, many-lobed, the lobes acute or acuminate, sharply dentate; cauline leaves 2, similar, smaller, petioled, constricted in the middle and generally peltate near the margin; cyme many-flowered, 2′–3′ broad; flowers white; petals flat, oblong, obtuse; fruiting pedicels slender, 1′ long or more; berries blue, oblong, 6″ long.

In woods, Virginia to Georgia along the mountains, mainly at higher altitudes. May–June.

4. JEFFERSÒNIA Bart. Trans. Am. Phil. Soc. 3: 342. 1793.

Glabrous herbs, with basal palmately-veined or palmately-lobed leaves, and solitary white flowers borne on slender scapes. Sepals 4, petaloid, caducous. Petals 8, flat, longer than the sepals. Stamens 8; anthers dehiscent by valves. Pistil 1, many-ovuled. Capsule leathery, pyriform, half-circumscissile near the summit. Seeds oblong, arillate. [In honor of Thomas Jefferson.]

A genus of 2 species, one native of eastern North America, the other of Mantchuria.

1. Jeffersonia diphýlla (L.) Pers. Twin-leaf. (Fig. 1645.)

Podophyllum diphyllum L. Sp. Pl. 505. 1753.

Jeffersonia binata Bart. Trans. Am Phil. Soc. 3: 342. 1793.

Jeffersonia Bartonis Michx. Fl. Bor. Am. 1: 237. 1803.

Jeffersonia diphylla Pers. Syn. 1: 418. 1805.

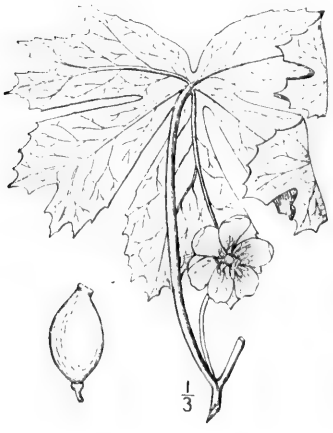
Erect, 6′–8′ high when in flower, attaining 16′–18′ in fruit. Leaves glaucous beneath, long-petioled, cordate or reniform, 3′–6′ long, 2′–4′ wide, parted longitudinally into 2 obliquely ovate obtuse lobed or entire divisions; lobes rounded, the sinuses sometimes 9″ deep; scape naked, 1-flowered; flowers white, about 1′ broad; petals oblong; stigma peltate, undulate; capsule about 1′ long, short-stipitate.

In woods, eastern Pennsylvania, western New York and Ontario to Wisconsin, south to Virginia and Tennessee. Ascends to 2500 ft. in Virginia. May. Called also Rheumatism Root.

5. PODOPHÝLLUM L. Sp. Pl. 505. 1753.

Erect herbs, with horizontal poisonous rootstocks, large peltate palmately lobed leaves, and solitary white flowers. Sepals 6, petaloid, fugacious. Petals 9–6, flat, obovate, longer than the sepals. Stamens as many or twice as many as the petals; anthers linear, longitudinally dehiscent. Pistil 1 (rarely several), many-ovuled, forming a large fleshy berry in fruit. Seeds numerous, obovate, enclosed in fleshy arils. [Greek, foot-leaf.]

A genus of about 4 species, one native of eastern North America and Japan, the others Asiatic.



1. Podophyllum peltàtum L. May Apple. Wild Mandrake. (Fig. 1646.)

Podophyllum peltatum L. Sp. Pl. 505. 1753.

Erect, 1°–1½° high. Basal leaves centrally peltate, nearly 1° in diameter, long-petioled, deeply 5–7-lobed, glabrous, or pubescent and light green on the lower surface, darker above; lobes 2-cleft and dentate at the apex; flowering stems appearing from different rootstocks, bearing 1–3 similar leaves, or occasionally leafless; flower white, stout-peduncled, nodding, 2′ broad, appearing from the base of the upper leaf and generally from immediately between the two leaves; fruit ovoid, yellowish, 2′ long, edible.

In low woods, western Quebec and throughout southern Ontario to Minnesota, south to Florida, Louisiana and Texas. Ascends to 2500 ft. in Virginia. Also known as Wild Lemon and Hog Apple. May.

Family 28. **MENISPERMÀCEAE** DC. Prodr. 1: 95. 1824.

MOONSEED FAMILY.

Climbing or twining woody or herbaceous vines, with alternate entire or lobed leaves, no stipules, and small dioecious panicled racemose or cymose flowers. Sepals 4–12. Petals 6, imbricated in 2 rows, sometimes fewer, or none. Stamens about the same number as the petals. Carpels 3–∞ (generally 6), 1-ovuled, separate; styles commonly recurved. Fruit drupaceous. Embryo long, curved.

About 55 genera and 150 species, mainly of tropical distribution, a few extending into the temperate zones.

Petals none. 1. *Calycocarpum.*
Petals present.
Stamens 6; drupe red. 2. *Cebatha.*
Stamens 12–many; drupe black. 3. *Menispermum.*

1. **CALYCOCÀRPUM** Nutt.; T. & G. Fl. N. A. 1: 48. 1838.

A high climbing vine, with large petioled palmately lobed leaves, and greenish flowers in long narrow drooping panicles. Sepals 6, oblong, obtuse. Petals none. Stamens about 12, nearly equalling the sepals; anthers 2-celled. Pistils 3; stigma laciniate. Drupe oval, the stone flattened and hollowed out on one side. [Greek, cup-fruit, in allusion to the cup-like stone.]

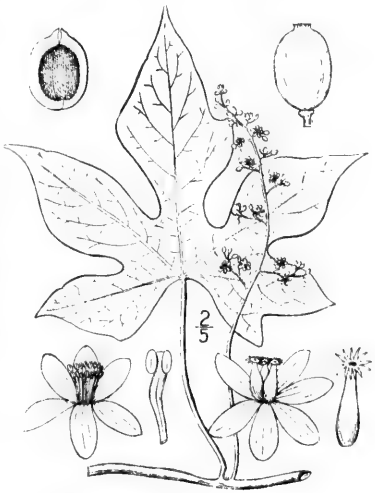
A monotypic genus of eastern North America.

1. Calycocarpum Lyoni (Pursh) Nutt. Cup-seed. (Fig. 1647.)

Menispermum Lyoni Pursh, Fl. Am. Sept. 371. 1814.

Calycocarpum Lyoni Nutt.; A. Gray, Gen. Ill. 1: 76. 1848.

Climbing to the tops of trees, glabrous or slightly pubescent. Leaves long-petioled, thin, very broadly ovate or nearly orbicular in outline, 5′–8′ long, cordate with a broad round sinus, palmately 5–7-lobed, glabrous above, more or less pubescent on the veins beneath; lobes ovate or oblong, acute or acuminate, repand, dentate or entire; panicles axillary, 5′–10′ long, loose; flowers 2″ broad, strictly dioecious; drupe nearly 1′ long, black, the stone toothed or erose along the margin of its lateral cavity; pistillate flowers sometimes containing abortive stamens.



In rich woods, Illinois to Missouri and Kansas, south to Florida and Louisiana. May–June, the fruit ripe in August.

2. **CÉBATHA** Forsk. Fl. AEgypt. 171. 1775.

[COCCULUS DC. Syst. Veg. 1: 515. 1818.]

Climbing vines with small dioecious panicled flowers. Sepals 6, arranged in 2 series. Petals 6, shorter than the sepals, concave. Stamens 6; anthers 4-celled or 4-lobed. Pistils 3–6, sometimes accompanied by sterile filaments; styles erect; stigma entire. Drupe globose or ovoid, the stone flattened, curved. [Name Arabic.]

A genus of about 10 species, mainly of tropical regions, two or three in the temperate zones.

1. Cebatha Carolina (L.) Britton. Carolina Moonseed. (Fig. 1648.)

Menispermum Carolinum L. Sp. Pl. 340. 1753.
Cocculus Carolinus DC. Syst. Veg. 1: 524. 1818.
Cebatha Carolina Britton, Mem. Torr. Club, 5: 162. 1894.

A slender vine, trailing, or climbing to the height of several feet, the stem glabrous or pubescent. Leaves broadly ovate, 2′–4′ long, cordate or rounded at the base, entire or lobed, acute or obtuse, sometimes densely pubescent beneath, mainly glabrous above; petioles slender, 1′–4′ long; panicles axillary and terminal, loose, 1′–5′ long; flowers about 1″ broad; drupe red, laterally flattened, 2″–3″ in diameter, the stone curved into a closed spiral, crested on the sides and back.

Along streams, Virginia to Illinois and Kansas, south to Florida and Texas. June–Aug.

3. MENISPÉRMUM L. Sp. Pl. 340. 1753.

High climbing vines, with small dioecious panicled flowers. Sepals 4–8, arranged in 2 series, longer than the 6–8 petals. Stamens 12–24. Anthers 4-celled. Pistils 2–4, inserted on a slightly elevated receptacle and generally accompanied by 6 sterile filaments. Drupe nearly globular, or ovoid, laterally flattened, the stone curved into a spiral and crested on the sides and back. [Greek, moonseed.]

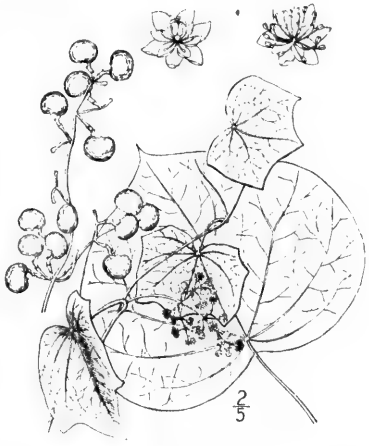
A genus of 2 species, one native of eastern North America, the other of eastern Asia.

1. Menispermum Canadénse L. Canada Moonseed. (Fig. 1649.)

Menispermum Canadense L. Sp. Pl. 340. 1753.

Stem climbing over bushes or walls, 6°–12° in length, slender, slightly pubescent, or glabrous. Leaves slender-petioled, very broadly ovate, 4′–8′ wide, cordate or sometimes nearly truncate at base, acuminate, acute or obtuse, entire or with 3–7 lobes, pale beneath, peltate near the base, although the petiole is sometimes inserted so near the margin that this character is not apparent; flowers greenish-white, 2″ wide; panicles loose, bracteolate; drupe globose-oblong, 3″–4″ in diameter, the stone spirally curved.

In woods along streams, western Quebec to Manitoba, south to Georgia and Arkansas. Ascends to 2600 ft. in Virginia. Bunches of fruit bluish black, with the aspect of small grapes. June–July.



Family 29. CALYCANTHÀCEAE Lindl. Nat. Syst. Ed. 2, 159. 1836.

Strawberry-shrub Family.

Shrubs, with opposite entire short-petioled leaves, no stipules, and terminal solitary large flowers on lateral leafy branches. Sepals and petals imbricated in many series. Stamens ∞, the inner sterile, short, inserted on the receptacle; anthers innate. Pistils ∞, nearly enclosed in the hollow receptacle; ovules 1 or 2, anatropous. Fruit accessory, consisting of the enlarged ovoid oblong or pyriform receptacle, to which the bases of petals, sepals and bracts are adnate, enclosing few to many smooth shining achenes. Seed erect; cotyledons foliaceous, convolute.

A family of 2 genera and about 5 species, natives of North America and eastern Asia.

1. BUTNÈRIA Duham. Trait. Arb. 1: 113. *pl. 45.* 1755.

[CALYCANTHUS L. Syst. Ed. 10, 1066. 1759.]

Stamens inserted in several rows. Flowers purple or red. Otherwise as in the family. [Name in honor of Butner or Buettner.]

The genus comprises 3 species, one additional to those here described occurring on the Pacific Coast. *Chimonanthus* Lindl. of Japan and China comprises 2 species with yellow flowers smaller than those of *Butneria*. The species are called Sweet-scented Shrub and Carolina Allspice.

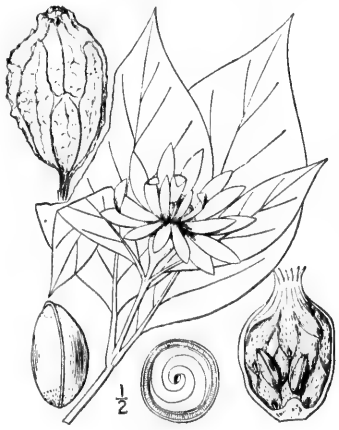
Leaves pubescent beneath; flowers fragrant. 1. *B. florida.*
Leaves green, often glaucous beneath, smooth or rough above; flowers not fragrant. 2. *B. fertilis.*

1. Butneria flórida (L.) Kearney. Hairy Strawberry-shrub. (Fig. 1650.)

Calycanthus floridus L. Syst. Ed. 10, 1066. 1759.
Buettneria florida Kearney, Bull. Torr. Club, 21: 175. 1894.

A branching shrub, 4°–8° high, the branchlets and petioles pubescent. Leaves ovate or oval, acute or obtuse, soft-downy or pubescent beneath, rough above; flowers dark purple, about 1′ broad, with a strong odor of strawberries when crushed; sepals and petals linear or oblong, acutish or blunt, 6″–8″ long.

In rich soil, Virginia (?), North Carolina to Georgia, Alabama and Mississippi. Freely planted for ornament. April–Aug.



2. Butneria fértilis (Walt.) Kearney. Smooth Strawberry-shrub. (Fig. 1651.)

Calycanthus fertilis Walt. Fl. Car. 151. 1788.
Calycanthus laevigatus Willd. Enum. 559. 1809.
Calycanthus glaucus Willd. Enum. 559. 1809.
Buettneria fertilis Kearney, Bull. Torr. Club, 21: 175. 1894.

A branching shrub, 4°–8° high, the branchlets and petioles glabrous or nearly so. Leaves ovate, ovate-lanceolate or oblong-lanceolate, acute or acuminate, rough and dark green above, glaucous and sometimes slightly pubescent beneath or bright green and smooth on both sides; sepals and petals linear or linear-lanceolate, acute; flowers greenish-purple, inodorous.

In rich woods, Pennsylvania to North Carolina, east Tennessee and Georgia along the mountains. March–Aug. Occasional in cultivation. Fruit reputed to be poisonous to sheep.

Family 30. LAURÀCEAE Lindl. Nat. Syst. Ed. 2, 200. 1836.

LAUREL FAMILY.

Aromatic trees and shrubs, with alternate (very rarely opposite) mostly thick evergreen or deciduous, punctate exstipulate leaves. Flowers small, perfect, polygamous, dioecious, or sometimes monoecious, usually fragrant, yellow or greenish, in panicles, corymbs, racemes or umbels. Calyx 4–6-parted, the segments imbricated in 2 series in the bud. Corolla none. Stamens inserted in 3 or 4 series of 3 on the calyx, distinct, some of them commonly imperfect or reduced to staminodia; anthers 2-celled or 4-celled, opening by valves. Ovary superior, free from the calyx, 1-celled; ovule solitary, anatropous, pendulous; style filiform or short, rarely almost wanting; stigma discoid or capitate. Fruit

a 1-seeded drupe or berry. Endosperm of the seed none. Cotyledons plano-convex, accumbent.

About 40 genera and 900 species, widely distributed in tropical regions; a few in the temperate zones.

Flowers perfect, panicled, not involucrate; leaves evergreen. 1. *Persea.*
Flowers mostly dioecious, racemose or umbellate, involucrate; leaves deciduous.
Anthers 4-celled.
Flowers in umbelled racemes; leaves, or some of them, lobed. 2. *Sassafras.*
Flowers in capitate umbels; leaves all entire. 3. *Malapoenna.*
Anthers 2-celled; leaves entire. 4. *Benzoin.*

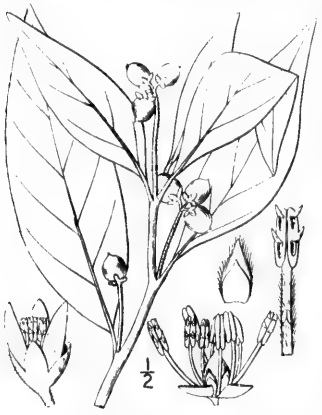
1. PÉRSEA Gaertn. f. Fr. & Sem. 3: 222. 1805.

Trees or shrubs, with alternate coriaceous persistent entire leaves, and perfect panicled flowers. Calyx 6-parted, persistent, its segments equal or unequal. Stamens 12, in 4 series of 3, the inner series reduced to gland-like staminodia, the 3 other series anther-bearing, their anthers 4-celled, 4-valved, those of the third series extrorse and the others introrse in our species. Staminodia large, cordate, stalked. Fruit a globose or oblong berry. [Ancient name of some oriental tree.]

About 50 species, natives of America. Besides the following another occurs in Florida.

Twigs and petioles puberulent or nearly glabrous. 1. *P. Borbonia.*
Twigs and petioles densely tomentose. 2. *P. pubescens.*

1. Persea Borbònia (L.) Spreng. Red Bay. Isabella-wood. (Fig. 1652.)



Laurus Borbonia L. Sp. Pl. 370. 1753.
Persea Borbonia Spreng. Syst. 2: 268. 1825.
Persea Caroliniensis Nees, Syst. 150. 1836.
Notaphoebe Borbonia Pax in Engler & Prantl, Nat. Pflf. 3: Abt. 2, 116. 1889.

A tree, with dark red bark, reaching a maximum height of about 65° and a trunk diameter of 3°. Twigs puberulent or nearly glabrous. Leaves lanceolate, oblong or oblong-lanceolate, bright green above, paler beneath, glabrous when mature, 2′–7′ long, 1′–2′ wide, obscurely pinnately veined, acute, acuminate or some of them obtuse at the apex, narrowed at the base; petioles ½′–1′ long; peduncles short, axillary, often little longer than the petioles, bearing few-flowered panicles; calyx puberulent, spreading in fruit, its inner segments longer than the outer; berries dark blue, about ½′ in diameter, their pedicels thick, red.

Along streams and borders of swamps, Delaware (?) Virginia to Florida and Texas, near the coast, north to Arkansas. Wood hard, strong; color bright red; weight per cubic foot 40 lbs. April–June. Fruit ripe Aug.–Sept.

2. Persea pubéscens (Pursh) Sarg. Swamp Bay. (Fig. 1653.)

Laurus Carolinensis var. *pubescens* Pursh, Fl. Am. Sept. 1814.
Persea Carolinensis var. *palustris* Chapm. Fl. S. States, 393. 1860.
Persea pubescens Sarg. Silva, 7: 7. *pl. 302.* 1895.

A tree, seldom over 35° high, the trunk sometimes 15′ in diameter. Bark brown; twigs densely brown-tomentose; leaves oval, oblong or lanceolate, glabrous and shining above when mature, pubescent beneath or also tomentose on the veins, acute, acuminate or obtuse at the apex, usually narrowed at the base, strongly pinnately veined, 3′–7′ long, ½′–1½′ wide; petioles 4″–8″ long; peduncles tomentose, mostly longer than the petioles, sometimes 2′–3′ long; calyx tomentose, its inner segments longer than the outer; berry dark blue, 6″–9″ in diameter.

In swamps and along streams, southern Virginia to Florida and Mississippi, near the coast. Wood hard, orange-brown; weight per cubic foot 40 lbs. May–July. Fruit ripe Sept.

2. SÁSSAFRAS Nees & Eberm. Handb. Med. Pharm. Bot. **2**: 418. 1831.

A rough-barked tree, with broad entire or 1–3-lobed deciduous leaves, and yellow dioecious flowers in involucrate umbelled racemes at the ends of twigs of the preceding season, unfolding with or before the leaves, the involucre composed of the persistent bud-scales. Calyx 6-parted, that of the pistillate flowers persistent, its segments equal. Staminate flowers with 3 series of 3 stamens, the 2 outer series with glandless filaments, those of the inner series with a pair of stalked glands at the base. Anthers all 4-celled and introrse, 4-valved. Pistillate flowers with about 6 staminodia and an ovoid ovary. Fruit an oblong-globose blue drupe. [The popular Spanish name.]

A monotypic genus of eastern North America.

1. Sassafras Sássafras (L.) Karst. Sassafras or Ague Tree. (Fig. 1654.)

Laurus Sassafras L. Sp. Pl. 371. 1753.
Sassafras officinale Nees & Eberm. Handb. Med. Pharm. Bot. 2: 418. 1831.
Sassafras Sassafras Karst. Deutsch. Fl. 505. 1880–83.

A tree sometimes 125° high, the trunk 7° in maximum diameter; the bark very rough in irregular ridges, aromatic, the twigs and leaves mucilaginous, pubescent when young but becoming glabrous. Leaves oval and entire or mitten-shaped, or 3-lobed to about the middle and often as wide as long, membranous, pinnately veined, petioled; petioles 1′ long or less; racemes several or numerous in the umbels, peduncled; flowers about 3″ broad; stamens about equalling the calyx-segments; fruiting pedicels red, much thickened below the calyx; drupe nearly ½′ high.

In dry or sandy soil, Massachusetts to Ontario, Michigan, Florida and Texas. Root largely used for the aromatic oil. Wood soft, weak, durable, brittle; color dull orange; weight 31 lbs. per cubic foot. Ascends to 3500 ft. in Virginia. April–May. Fruit ripe July–Aug.

3. MALAPOÈNNA Adans. Fam. Pl. **2**: 447. 1763.

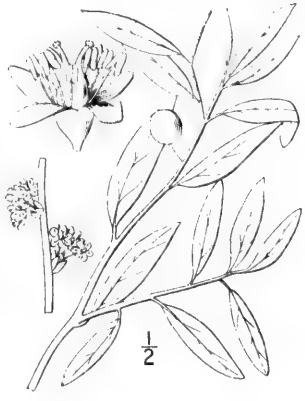
[TETRANTHERA Jacq. Hort. Schoen. 1: 59. *pl. 113.* 1797.]

Trees or shrubs, with entire leaves, deciduous in our species, and small greenish or yellow flowers in small umbels or almost capitate, involucrate by the bud-scales, axillary, or in the following species unfolding before the leaves at the nodes of twigs of the previous season. Calyx 6-parted, deciduous. Staminate flowers much as in *Sassafras*, bearing 3 series of 3 stamens, their anthers all 4-celled, 4-valved and introrse. Pistillate flowers with 9 or 12 staminodia and a globose or oval ovary. Fruit a small globose or oblong drupe. [Malabar name.]

About 100 species, natives of tropical and warm regions of both the Old World and the New, only the following known in North America.

1. Malapoenna geniculàta (Walt.) Coulter. Pond Spice. (Fig. 1655.)

Laurus geniculata Walt. Fl. Car. 133. 1788.
Tetranthera geniculata Nees, Syst. 567. 1836.
Litsea geniculata Mez, Jahrb. Bot. Gart. Berlin, **5**: 476. 1889.
Malapoenna geniculata Coulter, Mem. Torr. Club, **5**: 164. 1894.



A much-branched shrub, with terete smooth zigzag spreading twigs. Leaves oblong, firm, ½′–2′ long, ¼′–½′ wide, acute or rounded at the apex, narrowed at the base, glabrous and rather dark green above, paler and puberulent, at least on the veins, beneath, or quite glabrous when mature; umbels 2–4-flowered, sessile; involucres of 2–4 scales; flowers yellow, less than 2″ broad; drupe globose, red, about 3″ in diameter.

In swamps and wet soil, southern Virginia to Florida. March–April.

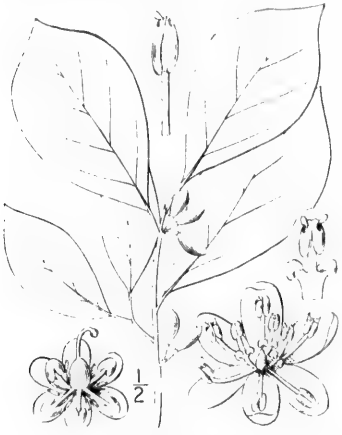
4. BÉNZOIN Fabric. Enum. Pl. Hort. Helmst. 1763.

Shrubs (some Asiatic species trees), with alternate entire pinnately veined and in our species deciduous leaves, and dioecious or polygamous yellow flowers, in lateral sessile involucrate clusters unfolding before the leaves, the involucre of 4 deciduous scales. Calyx-segments 6, equal, deciduous. Staminate flowers with 3 series of 3 stamens, the filaments of the inner series lobed and gland-bearing at the base, those of the 2 outer series glandless; anthers all introrse, 2-celled, 2-valved. Pistillate flowers with 12–15 staminodia and a globose ovary. Fruit an obovoid or oblong red drupe. [Named from the Benzoin gum, from its similar fragrance.]

About 7 species, of eastern North America and Asia. Only the following are North American.

Shrub glabrous or nearly so throughout; leaves narrowed at the base. 1. *B. Benzoin.*
Twigs and lower surfaces of the leaves pubescent; leaves rounded or subcordate at the base. 2. *B. melissaefolium.*

1. Benzoin Bénzoin (L.) Coulter. Spice-bush. Benjamin-bush. (Fig. 1656.)



Laurus Benzoin L. Sp. Pl. 370. 1753.
Lindera Benzoin Blume, Mus. Bot. Lugd. 1: 324. 1857.
B. Benzoin Coulter, Mem. Torr. Club, 5: 164. 1894.

A glabrous or nearly glabrous shrub, 4°–20° high, with smooth bark and slender twigs. Leaves obovate oval or elliptic, 2′–5′ long, 1′–2½′ wide, acute, short-acuminate or some of them rounded at the apex, narrowed at the base, pale beneath; petioles 3″–6″ long; flowers about 1½″ broad, bright yellow, fragrant; pedicels about equalling the calyx-segments; anthers oval, minutely emarginate at the summit; ovary about as long as the style; drupe 4″–5″ long, about 3″ in diameter.

In moist woods, thickets and along streams, Massachusetts to Ontario and Michigan, south to North Carolina, Tennessee and Kansas. March–May. Fruit ripe Aug.–Sept. Ascends to 2500 ft. in Virginia. Called also Feverbush and Wild Allspice. Leaves of young shoots much larger.

2. Benzoin melissaefòlium (Walt.) Nees. Hairy Spice-bush. (Fig. 1657.)

Laurus melissaefolia Walt. Fl. Car. 134. 1788.
Lindera melissaefolia Blume, Mus. Bot. Lugd. 1: 324. 1857.
Benzoin melissaefolium Nees, Syst. 494. 1836.

A shrub similar to the preceding species but the young twigs, buds and lower surfaces of the leaves densely pubescent. Leaves ovate-lanceolate or oblong, acute or acuminate at the apex, rounded or subcordate at the base, 2′–4′ long, 9″–18″ wide; petioles 1″–3″ long; pedicels equalling or slightly longer than the calyx-segments; anthers truncate at the summit; drupe 3″–5″ high.

In swamps and wet soil, Illinois and Missouri to North Carolina, south to Alabama and Florida. Feb.–March.

Family 31. PAPAVERÀCEAE B. Juss. Hort. Trian. 1759.

Poppy Family.

Herbs, with milky or colored sap, and alternate leaves or the upper rarely opposite. Stipules none. Flowers solitary or in clusters, perfect, regular or irregular. Sepals 2 (rarely 3 or 4), caducous. Petals 4–6 or rarely more, imbricated, often wrinkled, deciduous. Stamens numerous or few, hypogynous, distinct; filaments filiform; anthers longitudinally dehiscent. Ovary 1, many-ovuled, mainly 1-celled; style short; stigma simple or divided; ovules anatropous. Fruit a capsule, generally dehiscent by a pore, or by valves, rarely indehiscent.

About 26 genera and 200 species, widely distributed, most abundant in the north temperate zone.

* Flowers regular.

Pod dehiscent at the top, or only to the middle.
- Leaves not spiny-toothed. 1. *Papaver.*
- Leaves spiny-toothed. 2. *Argemone.*

Pod dehiscent to the base.
- Flowers white; juice red. 3. *Sanguinaria.*
- Flowers and juice yellow.
  - Capsule oblong or short-linear, bristly. 4. *Stylophorum.*
  - Capsule long-linear, rough, tipped with a dilated stigma. 5. *Glaucium.*
  - Capsule linear, smooth, tipped with a subulate style and minute stigma. 6. *Chelidonium.*

** Flowers irregular. Family FUMARIACEAE DC.

Each of the 2 outer petals spurred at the base.
- Corolla deeply cordate at base; petals slightly coherent. 7. *Ricuculla.*
- Corolla rounded or slightly cordate; petals permanently coherent, persistent. 8. *Adlumia.*

One of the outer petals spurred at base.
- Capsule 2-valved, few-several-seeded. 9. *Capnoides.*
- Fruit globose, indehiscent, 1-seeded. 10. *Fumaria.*

1. PAPÀVER L. Sp. Pl. 506. 1753.

Hispid or glaucous herbs, with milky sap, lobed or dissected alternate leaves, nodding flower-buds and showy regular flowers. Sepals 2 or occasionally 3. Petals 4–6. Stamens ∞. Anthers extrorse. Ovules ∞, borne on numerous internally-projecting placentae. Stigmas united into a radiate persistent disc. Capsule globose, obovoid, or oblong, dehiscent near the summit. Seeds marked with minute depressions. [Classic Latin name of the poppy.]

About 25 species, mostly natives of the Old World, but 2 or 3 indigenous in western America.

Glabrate and glaucous; leaves lobed, clasping; capsule subglobose. 1. *P. somniferum.*
Green, hirsute; leaves pinnately divided.
- Stems branching, leafy; weeds of waste or cultivated ground.
  - Capsule glabrous.
    - Capsule subglobose or top-shaped. 2. *P. Rhoeas.*
    - Capsule oblong, narrowed below. 3. *P. dubium.*
  - Capsule oblong, hispid with a few erect hairs. 4. *P. Argemone.*
- Leaves all basal; capsule obovoid, densely hispid with erect hairs; arctic. 5. *P. alpinum.*

1. Papaver somniferum L. Opium or Garden Poppy. (Fig. 1658.)

Papaver somniferum L. Sp. Pl. 508. 1753.

Erect, sparingly branched, glaucous, 1°–3° high. Leaves clasping by a cordate base, 4′–8′ long, 2′–3′ wide, oblong, wavy, lobed or toothed; flowers 3′–4′ broad, bluish-white with a purple centre; filaments somewhat dilated upward; capsule globose, glabrous.

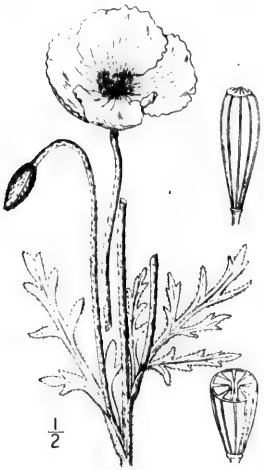
Occasional in waste grounds and on ballast. Fugitive from Europe. Often cultivated for ornament. Widely cultivated in Europe and Asia for its capsules, from which the drug opium, and poppy-oil are derived. Native of the Mediterranean region. Summer.

2. Papaver Rhoèas L. Field, Red or Corn Poppy. (Fig. 1659.)

Papaver Rhoeas L. Sp. Pl. 507. 1753.

Erect, branching, 1°–3° high, hispid with spreading bristly hairs. Lower leaves petioled, 4′–6′ long, the upper smaller, sessile, all pinnatifid; lobes lanceolate, acute, serrate; flowers 2′–4′ broad, scarlet with a darker centre; filaments not dilated; capsule subglobose or top-shaped, glabrous, the disk with 10 or more stigmatic rays.

In waste places and on ballast, not common. Occasionally cultivated. Fugitive from Europe. Summer. Old English names, Corn-rose, Red-weed, Headache, Canker-rose and Cheese-bowl.

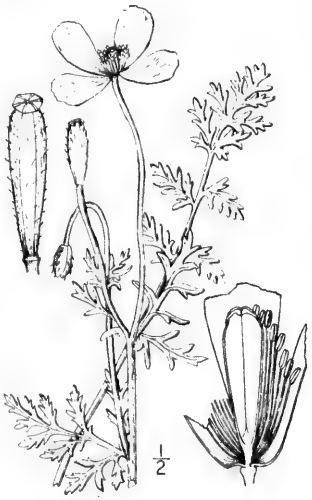


3. Papaver dùbium L. Long Smooth-fruited Poppy. (Fig. 1660.)

Papaver dubium L. Sp. Pl. 1196. 1753.

Slender, branching, 1°–2° high, hirsute with spreading hairs. Lower leaves petioled, 4′–6′ long, the upper smaller, nearly sessile, all deeply pinnately divided; lobes oblong, pinnatifid, cleft or sometimes entire; flowers 2′ broad, scarlet, sometimes darker in the centre; filaments not dilated; capsule oblong, glabrous, 8″–10″ long, narrowed below; stigmatic rays 6–10.

In waste and cultivated grounds, Pennsylvania to Virginia and southward. Also in ballast about the seaports. Adventive from Europe. Summer.

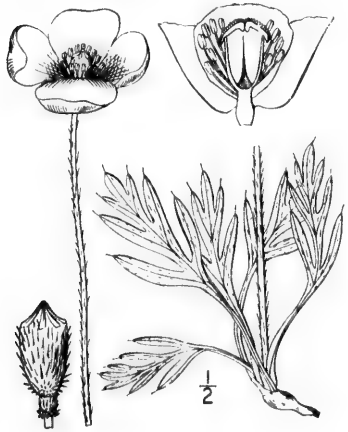


4. Papaver Argemòne L. Pale or Long Rough-fruited Poppy. (Fig. 1661.)

Papaver Argemone L. Sp. Pl. 506. 1753.

Slender, hirsute, or nearly glabrous, 1°–2° high, branching. Leaves all but the upper petioled, lanceolate in outline, pinnately divided, the divisions pinnatifid and toothed; flowers 1′–2′ broad, pale red, often with a darker centre; filaments not dilated; capsule oblong, 8″–10″ long, narrowed at the base, bristly-hairy.

Waste grounds, Philadelphia, and in ballast about the seaports. Fugitive from Europe. Summer. Old name Wind-rose.



5. Papaver alpìnum L. Arctic Poppy. (Fig. 1662.)

Papaver alpinum L. Sp. Pl. 507. 1753.
Papaver nudicaule L. Sp. Pl. 507. 1753.

Perennial, more or less hirsute. Leaves all basal, pinnately lobed or cleft, the lobes linear-oblong, acute or obtuse; scape erect, slender, 2′–12′ tall, much exceeding the leaves; flower solitary, 1′–3′ broad, yellow or red; filaments filiform; capsule narrowly obovoid, 5″–8″ high, about 4″ in greatest diameter, densely beset with erect bristly hairs.

Greenland and Labrador to Alaska and British Columbia. Also in Europe and Asia. Summer.

2. ARGEMÒNE L. Sp. Pl. 508. 1753.

Glaucous herbs, with yellow sap, spiny-toothed leaves and large showy flowers. Sepals 2 or 3. Petals 4–6. Stamens ∞. Placentae 4–6, many-ovuled. Style very short. Stigma dilated, 3–6-radiate. Capsule prickly, oblong, dehiscent at the apex by valves. Seeds numerous, cancellate. [Greek, an eye disease, supposed to be relieved by the plant so called.]

A genus of about 6 species, natives of the warmer parts of America.

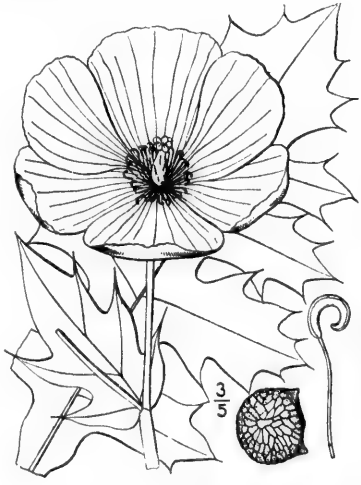
Petals yellow; leaves blotched; flowers sessile or subsessile. 1. *A. Mexicana.*
Petals white; leaves glaucous or green, not blotched; flowers peduncled. 2. *A. alba.*

1. Argemone Mexicàna L. Mexican or Prickly Poppy. (Fig. 1663.)

Argemone Mexicana L. Sp. Pl. 508. 1753.

Stem stout, 1°–2° high, simple or sparingly branched, spiny or sometimes nearly unarmed. Leaves sessile, clasping by a narrowed base, 4′–10′ long, 2′–4′ wide, glaucous, white-spotted, runcinate-pinnatifid, spiny-toothed and more or less spiny on the veins; flowers yellow sessile or subsessile, 1′–3′ broad; sepals acuminate, bristly-pointed; stamens 4″–5″ long; filaments slender, much longer than their anthers; capsule 1′ long or more.

In waste places, New Jersey and Pennsylvania to Florida and Texas. Also in ballast about the northern seaports. Adventive from tropical America. A common weed in the tropics. The seeds yield a valuable painter's oil. June–Sept.



2. Argemone álba Lestib. White Prickly Poppy. (Fig. 1664.)

Argemone alba Lestib. Bot. Belg. Ed. 2: 3: Part 2, 132. 1799.

Argemone albiflora Hornem. Hort. Havn. 469. 1815.

Argemone intermedia Sweet, Hort. Brit. Ed. 2, 585. 1830.

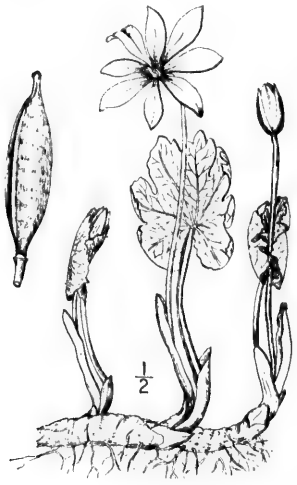
Similar to the preceding species but commonly stouter and taller. Leaves pinnatifid or pinnately lobed, glaucous or green, not blotched, but sometimes whitish along the veins; flowers white, usually much larger, 3′–4′ broad, distinctly peduncled; petals rounded; spines of the sepal-tips stouter; capsules 1′–1½′ long.

Prairies, South Dakota to Texas, Arizona and Mexico, east to Florida. May–Aug.

3. SANGUINÀRIA L. Sp. Pl. 505. 1753.

Rootstock horizontal, thick; juice red. Leaves basal, palmately veined and lobed, cordate or reniform. Scape 1-flowered (rarely 2). Flower white. Sepals 2, fugacious. Petals 8–12, arranged in 2 or 3 rows. Stamens ∞. Stigmas grooved. Placentae 2. Capsule oblong, dehiscent to the base, the valves persistent. Seeds smooth, crested. [Name from the red color of the juice.]

A monotypic genus of eastern North America.



1. Sanguinaria Canadénsis L. Bloodroot.

(Fig. 1665.)

Sanguinaria Canadensis L. Sp. Pl. 505. 1753.

Glabrous, glaucous, especially when young. Rootstock ½′–1′ thick, several inches long, densely clothed with thick fibrous roots; petioles 6′–14′ long; leaves 6′–12′ broad, 4′–7′ long, palmately 5–9-lobed, the lobes repand, or cleft at the apex; flowering scape at length overtopped by the leaves; flower 1′–1½′ broad; petals oblong or obovate, early deciduous; capsule oblong, narrow, 1-celled, 2-valved, 1′ long.

In rich woods, Nova Scotia to Manitoba and Nebraska, south to Florida and Arkansas. Ascends to 2500 ft. in Virginia. Also called Red Puccoon and Red Indian Paint. Flower sometimes pinkish. The scape rarely bears 2 or 3 flowers and bracts. April–May.

4. STYLÓPHORUM Nutt. Gen. 2: 7. 1818.

Herbs, with stout rootstocks, yellow sap, pinnatifid leaves and clustered or solitary flowers. Sepals 2. Petals 4. Stamens ∞. Placentae 2–4; style distinct; stigma 2–4-lobed, radiate. Capsule linear or ovoid, dehiscent to the base. Seeds cancellate, crested. [Name Greek, style-bearing.]

A genus of about 4 species, natives of eastern North America, the Himalayas, Japan and Mantchuria.

1. Stylophorum diphýllum (Michx.) Nutt. Yellow or Celandine Poppy.

(Fig. 1666.)

Chelidonium diphyllum Michx. Fl. Bor. Am. 1: 309. 1803.

Stylophorum diphyllum Nutt. Gen. 2: 7. 1818.

Meconopsis diphylla DC. Syst. Veg. 2: 88. 1821.

Glaucous, especially the lower surfaces of the leaves, sparingly pubescent, 12′–18′ high. Leaves basal and cauline, 4′–10′ long, slender-petioled, 1–2-pinnatifid, the divisions obovate, obtuse, lobed or irregularly crenate, those of the stem 2–4, the upper opposite; flowers 2–4, terminal, about 1′ broad, deep yellow; sepals hirsute, caducous; petals obovate, rounded; capsule 1′ long, ovoid, acute at each end, hirsute, tipped with the persistent style.

In low woods, western Pennsylvania (?), Ohio to Tennessee, west to Wisconsin and Missouri. March–May.

5. GLAÙCIUM Juss. Gen. Pl. 236. 1789.

Glaucous herbs, with alternate lobed or dissected leaves, and saffron-colored sap. Sepals 2. Petals 4. Stamens ∞. Placentae 2, rarely 3; stigma sessile, dilated, 2-lobed, the lobes convex. Capsule long-linear, 2-celled, dehiscent to the base. Seeds cancellate, crestless. [Name Greek, from the glaucous foliage.]

A genus of about 6 species, natives of the Old World, and mainly of the Mediterranean region.

1. Glaucium Glaùcium (L.) Karst. Yellow Horned or Sea Poppy. (Fig. 1667.)

Chelidonium Glaucium L. Sp. Pl. 506. 1753.
Glaucium luteum Scop. Fl. Carn. Ed. 2, 1: 369. 1772.
Glaucium Glaucium Karst. Deutsch. Fl. 649. 1880–83.

Stout, 2°–3° high, rigid, branching. Leaves thick, ovate or oblong, 3′–8′ long, 1′–2′ wide, scurfy, the basal and lowest cauline petioled, the upper sessile, clasping, all pinnatifid, the divisions toothed; flowers axillary and terminal, yellow, 1′–2′ broad; sepals scurfy; capsule narrowly-linear, 6′–12′ long, tipped with the persistent stigma.

In waste places, Long Island and southward near the coast to Virginia. Widely diffused as a weed in maritime regions of the Old World. Adventive from Europe. Summer.

6. CHELIDÒNIUM L. Sp. Pl. 505. 1753.

Erect branching herbs, with alternate deeply pinnatifid leaves, yellow sap and yellow flowers. Sepals 2. Petals 4. Stamens ∞. Placentae 2. Styles distinct; stigma not dilated, 2-lobed. Capsule linear, dehiscent to the base. Seeds smooth, shining, crested. [Name Greek for the swallow, which appears at about its flowering time.]

A monotypic genus of temperate Europe and Asia.

1. Chelidonium màjus L. Celandine. (Fig. 1668.)

Chelidonium majus L. Sp. Pl. 505. 1753.

Weak, 1°–2° high, sparingly pubescent. Leaves thin, 4′–8′ long, glaucous beneath, 1–2-pinnatifid, the segments ovate or obovate, crenate or lobed; petioles often dilated at the base; flowers 6″–8″ broad, borne in axillary pedunculate umbels; petals rounded; pedicels slender, 2″–6″ long, elongating in fruit; capsule glabrous, 1′–2′ long, tipped with the persistent style and stigma.

Waste places, roadsides and even in woods, common in the East. Naturalized or adventive from Europe. Summer. Called also Greater Celandine, to distinguish it from *Ficaria*, the Small or Lesser Celandine. Old names Swallow-wort and Tetter-wort April–Sept.

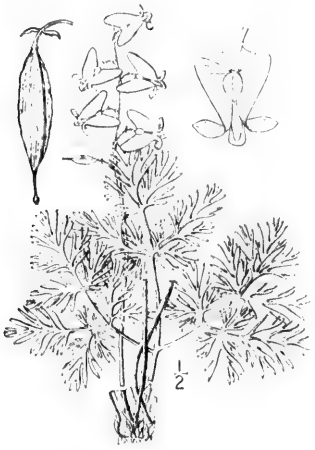
7. BICUCÚLLA Adans. Fam. Pl. 2: App. 23. 1763.

[DICLYTRA Borck. Roem. Arch. 1: Part 2, 46. 1797.]
[DICENTRA Bernh. Linnaea, 8: 468. 1833.]

Erect, diffuse or climbing herbs, with dissected leaves, and racemose irregular flowers. Pedicels 2-bracted. Sepals 2, scale-like. Corolla cordate at base; petals 4, in 2 pairs, connivent, slightly coherent, the exterior pair oblong, concave, spurred at the base, spreading at the apex, the inner narrow, clawed, coherent above, crested or winged on the back. Stamens 6, in two sets placed opposite the outer petals; filaments more or less diadelphous. Placentae 2; style slender; stigma 2–4-lobed. Capsule oblong or linear, dehiscent to the base by 2 valves. Seeds crested. [Name from the Latin, double-hooded.]

A genus of about 14 species, natives of North America and western Asia. The original spelling is *Bikukulla*.

Raceme simple; flowers white or whitish.
  Spurs divergent; inner petals minutely crested. 1. *B. Cucullaria.*
  Spurs short, rounded; inner petals conspicuously crested. 2. *B. Canadensis.*
Racemes paniculate; flowers pink. 3. *B. eximia.*

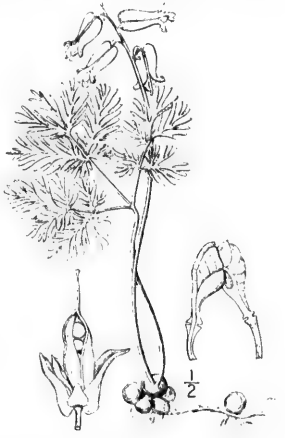


1. Bicuculla Cucullària (L.) Millsp. Dutchman's Breeches. Soldier's Cap. (Fig. 1669.)

Fumaria Cucullaria L. Sp. Pl. Pl. 699. 1753.
Dicltytra Cucullaria DC. Syst. Veg. **2**: 108. 1821.
Dielytra Cucullaria T. & G. Fl. N. A. **1**: 66. 1838.
Dicentra Cucullaria Torr. Fl. N. Y. **1**: 45. 1843.
Bicuculla Cucullaria Millsp. Bull. West Va. Agric. Exp. Sta. **2**: 327. 1892.

Delicate, glabrous, 5′–10′ high, arising from a bulbous base. Leaves all basal, pale beneath, slender-petioled, ternately compound, the divisions stalked and finely dissected into linear or oblanceolate segments; scape slender; raceme secund, 4–10-flowered; flowers nodding, pedicelled, 6″–8″ long, 8″–10″ broad at the base, white, or faintly pink, yellow at the summit; spurs widely divergent.

In woods, Nova Scotia to Lake Huron, Minnesota and Washington, south to North Carolina, Nebraska and Missouri. Ascends to 4500 ft. in Virginia. April–May.



2. Bicuculla Canadénsis (Goldie) Millsp. Squirrel Corn. (Fig. 1670.)

Corydalis Canadensis Goldie, Edinb. Phil. Journ. **6**: 329. 1822.
Diclytra Canadensis DC. Prodr. **1**: 126. 1824.
Dicentra Canadensis Walp. Rep. **1**: 118. 1842.
Bicuculla Canadensis Millsp. Bull. West Va. Agric. Exp. Sta. **2**: 327. 1892.

Glabrous, 6′–12′ high, the rootstock bearing numerous small tubers. Leaves all basal and nearly similar to those of the preceding species, decidedly glaucous beneath; scape slender; raceme 4–8-flowered; flowers nodding, short-pedicelled, 7″–9″ long, 5″ broad at the base, greenish-white, purplish tinged, slightly fragrant; spurs short, rounded.

In rich woods, Nova Scotia to Lake Huron and Minnesota, south along the mountains to Virginia and Kentucky, west to Missouri. May–June.

3. Bicuculla eximia (Ker) Millsp. Wild Bleeding-heart. (Fig. 1671.)

Fumaria eximia Ker, Bot. Reg. **1**: *pl. 50.* 1815.
Diclytra eximia DC. Syst. 2: 109. 1821.
Dicentra eximia Torr. Fl. ... Y. **1**: 46. 1843.
Bicuculla eximia Millsp. Bull. West Va. Agric. Exp. Sta. **2**: 327. 1892.

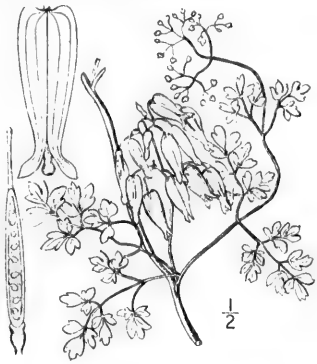
Glabrous, somewhat glaucous, weak, 1°–2° high; rootstock scaly. Leaves all basal, larger than those of the other eastern species, ternately parted, the divisions stalked, finely pinnatifid into oblong or ovate segments; scape slender, about equalling the leaves; raceme compound; flowers clustered in cymes, slender-pedicelled, pink, nodding, 8″–10″ long, 3″–4″ broad at the base; spurs short, rounded, incurved; outer petals spreading at the apex.

In rocky places, western New York, south to Georgia and Tennessee along the Alleghanies. May–Sept.

8. ADLÙMIA Raf. Med. Rep. (II.) 5: 352. 1808.

Glabrous climbing vines, with decompound leaves. Sepals 2, scale-like. Petals 4, all permanently united into a narrowly ovate cordate persistent spongy corolla 4-lobed at the apex. Stamens 6, monadelphous below, diadelphous above, adherent to the petals. Capsule oblong, included in the persistent corolla. Seeds crestless. Closely related to certain Asiatic species of *Bicuculla*. [In honor of John Adlum, a gardener of Washington.]

A monotypic genus of eastern North America.



1. Adlumia fungòsa (Ait.) Greene. Climbing Fumitory. (Fig. 1672.)

Fumaria fungosa Ait. Hort. Kew. 3: 1. 1789.
Adlumia cirrhosa Raf. Med. Rep. (II.) 5: 352. 1808.
A. fungosa Greene; B.S.P. Prel. Cat. N. Y. 3. 1888.

Weak, slender, climbing over other plants by its slender petioles. Leaves bipinnate, the primary divisions distant, the second more approximate, all slender-stalked; ultimate segments lobed or entire, very thin, ovate or cuneate, pale beneath; flowers numerous in axillary drooping cymes, 5″–7″ long, 3″ broad at the base, narrowly ovate, greenish purple; capsule 2-valved, few-seeded.

In moist woods and thickets, New Brunswick to Ontario and Michigan, south to North Carolina and Kansas. Called also Mountain Fringe and Alleghany Vine. June–Oct.

9. CAPNOÌDES Adans. Fam. Pl. 2: 431. 1763.

[NECKERIA Scop. Introd. 313. 1777.]
[CORYDALIS Vent. Choix, 19. 1803.]

Erect or climbing herbs, with basal and cauline decompound leaves, and racemose flowers, terminal, or opposite the petioles. Sepals 2, small. Corolla irregular, deciduous; petals 4, erect-connivent, one of the outer pair spurred at the base, the interior ones narrow, keeled on the back. Stamens 6, in 2 sets, opposite the outer petals. Placentae 2; style entire, dilated or lobed, persistent. Capsule linear or oblong, 2-valved. [Greek, smoke-like, in allusion to the smoke-like odor of some species, as in *Fumaria*.]

About 110 species, natives of the north temperate zone and South Africa.

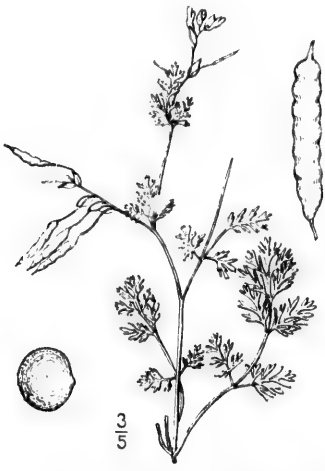
Stems tall; flowers pink with yellow tips. — 1. *C. sempervirens.*
Stems low, diffuse or ascending; flowers yellow.
  Flowers 3″–4″ long; spur short.
    Seeds sharp-margined, wrinkled; pods drooping or spreading. — 2. *C. flavulum.*
    Seeds blunt-margined, smooth, shining; pods ascending. — 3. *C. micranthum.*
  Flowers 6″–8″ long; spur conspicuous.
    Pods smooth.
      Seeds smooth or obscurely reticulated; pods spreading or pendulous.
        Capsules spreading or drooping, distinctly torulose; eastern. — 4. *C. aureum.*
        Capsules ascending, terete or slightly torulose; western. — 5. *C. montanum.*
      Seeds finely reticulated; pods ascending. — 6. *C. curvisiliqum.*
    Pods densely covered with transparent vesicles. — 7. *C. crystallinum.*

1. Capnoides sempérvirens (L.) Borck. Pink Corydalis. (Fig. 1673.)

Fumaria sempervirens L. Sp. Pl. 700. 1753.
Capnoides sempervirens Borck. in Roem. Arch. 1: Part 2, 44. 1797.
Corydalis sempervirens Pers. Syn. 2: 269. 1807.
Corydalis glauca Pursh, Fl. Am. Sept. 463. 1814.

Glabrous, glaucous, erect or ascending, 1°–2° high, freely branching. Lower leaves 1′–4′ long, short-petioled, the upper nearly sessile, pinnately decompound, the primary divisions distant, the ultimate segments obovate or cuneate, toothed or entire, obtuse, often mucronulate; flowers numerous, panicled, borne in cymose clusters at the ends of the branches, 5″–8″ long, pink with a yellow tip; spur rounded, about 1″ long; capsules narrowly linear, erect, 1′–2′ long, nodose when mature; seeds shining, minutely reticulated.

In rocky places, Nova Scotia to the Canadian Rocky Mountains, south to North Carolina and Minnesota. Also in British Columbia and Alaska. Ascends to 4500 ft. in North Carolina. April–Sept.



2. Capnoides flávulum (Raf.) Kuntze. Pale Corydalis. (Fig. 1674.)

Corydalis flavula Raf.; DC. Prodr. 1: 129. 1824.
Capnoides flavulum Kuntze, Rev. Gen. Pl. 14. 1891.

Slender, glabrous, diffuse or ascending, 6′–14′ high, freely branching. Lower leaves slender-petioled, the upper nearly sessile, all finely dissected into linear or oblong, sometimes cuneate, acute or obtuse segments; pedicels very slender; bracts conspicuous, broadly oblong, acute or acuminate, 2″–4″ long; spur ½″ long, rounded; outer petals slightly longer than the inner, yellow, sharp-pointed; crest dentate; pods torulose, drooping or spreading; seeds sharp-margined, finely reticulated.

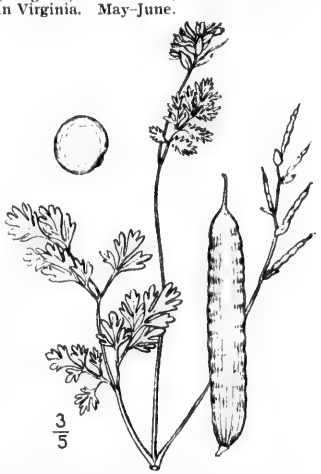
In rocky woods, southern New York, northern New Jersey, Pennsylvania, southwestern Ontario to Minnesota, Virginia, Kansas and Louisiana. Ascends to 4000 ft. in Virginia. May–June.

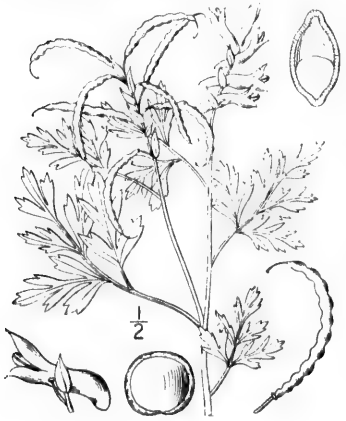
3. Capnoides micránthum (Engelm.) Britton. Small-flowered Corydalis. (Fig. 1675.)

Corydalis aurea var. *micrantha* Engelm.; A. Gray, Man. Ed. 5, 62. 1867.
Corydalis micrantha A. Gray, Coult. Bot. Gaz. 11: 189. 1886.
Capnoides micranthum Britton, Mem. Torr. Club, 5: 166. 1894.

Habit and foliage nearly as in the preceding species, the ultimate leaf segments generally slightly broader. Flowers similar, the crest entire; or sometimes cleistogamous and minute, spurless and but slightly crested; pods ascending, short-pedicelled, torulose; seeds obtuse-margined, smooth, shining.

In woods, Minnesota, Missouri to Texas, east to Florida and North Carolina. Feb.–April.





4. Capnoides àureum (Willd.) Kuntze. Golden Corydalis. (Fig. 1676.)

Corydalis aurea Willd. Enum. 740. 1809.
Capnoides aureum Kuntze, Rev. Gen. Pl. 14. 1891.

Glabrous, 6′–14′ high, diffuse, branching. Leaves all but the uppermost petioled, finely dissected into oblong obovate or cuneate segments, mainly broader than those of related species; flowers 6″ long, bright yellow; spur one-half the length of the body of the corolla, or more, rounded; outer petals keeled, not crested; pedicels short, slender; pods spreading or pendulous, torulose, especially when dry; seeds obtuse-margined, shining, obscurely reticulated.

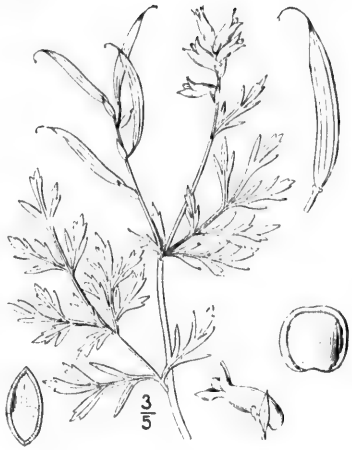
In woods, Nova Scotia to Minnesota, south to Pennsylvania and Wisconsin. March–May.

5. Capnoides montànum (Engelm.) Britton. Mountain Corydalis. (Fig. 1677.)

Corydalis montana Engelm.; A. Gray, Mem. Am. Acad. **4**: 6. 1849.
Corydalis aurea var. *occidentalis* Engelm.; A. Gray, Man. Ed. 5, 62. 1867.
Capnoides aureum var. *occidentale* A. S. Hitchcock, Spring Fl. Manhattan, 17. 1894.
Capnoides montanum Britton, Mem. Torr. Club, **5**: 166. 1894.

Closely resembles *C. aureum*, but is lighter green and the leaves are rather more finely divided. Flower-clusters spicate-racemose, the pedicels usually very short; flowers bright yellow, 6″–8″ long; spur of the corolla as long as its body, or less; capsules spreading or somewhat ascending; seeds sharp-margined, shining or obscurely reticulated.

In dry soil, South Dakota to Kansas and Texas, west to Oregon (?), Utah and Arizona. April–Aug.



6. Capnoides curvisíliqum (Engelm.) Kuntze. Curved-fruited Corydalis. (Fig. 1678.)

Corydalis curvisiliqua Engelm.; A. Gray, Man. Ed. 5, 62. 1867.
Capnoides curvisiliqum Kuntze, Rev. Gen. Pl. 14. 1891.

Similar to the two preceding species, often rather taller than either. Flowers spicate or spicate-racemose, about 8″ long, conspicuous, bright yellow; spur of the corolla conspicuous; pods curved upward, very short-pedicelled, stout, somewhat 4-sided; seeds sharp-margined, finely and distinctly reticulated.

South Dakota to Nebraska, Texas and Chihuahua. April–June.

7. Capnoides crystállinum (Engelm.) Kuntze. Vesicular Corydalis. (Fig. 1679.)

Corydalis crystallina Engelm.; A. Gray, Man. Ed. 5, 62. 1867.

Capnoides crystallinum Kuntze, Rev. Gen. Pl. 14. 1891.

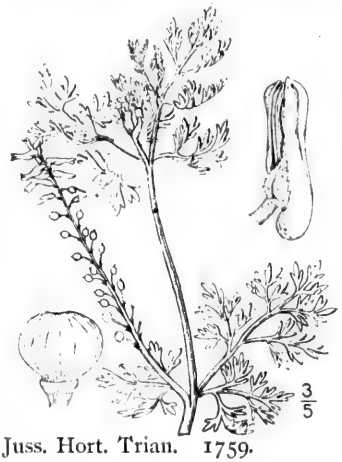
Erect or ascending, glabrous, 8′–20′ high, branching. Lower leaves slender-petioled, the upper sessile, all finely dissected into oblong or cuneate segments; pedicels stout, short, diverging; flowers spicate, 6″–8″ long, bright yellow; spur 3″–4″ long; crest large, dentate; capsules 9″ long, ascending or erect, densely covered with transparent vesicles; seeds acute-margined, reticulated.

Prairies, Missouri and Arkansas. April–June.

10. FUMÀRIA L. Sp. Pl. 699. 1753.

Diffuse or erect (sometimes climbing) herbs, with finely dissected leaves, and small racemose flowers. Sepals 2, scale-like. Petals 4, erect-connivent, the outer pair larger, 1 of them spurred, the inner narrow, coherent at the apex, keeled or crested on the back. Stamens 6, diadelphous, opposite the outer petals. Ovule 1; style slender; stigma entire or lobed. Fruit 1-seeded, nearly globose, indehiscent. [Name from the Latin, smoke, from the smoke-like smell of some species.]

About 15 species, all natives of the Old World.



1. Fumaria officinàlis L. Fumitory. Hedge Fumitory. (Fig. 1680.)

Fumaria officinalis L. Sp. Pl. 700. 1753.

Glabrous, stems diffuse or ascending, freely branching, 6′–3° long. Leaves petioled, finely dissected into entire or lobed linear oblong or cuneate segments; racemes axillary and terminal, 1′–3′ long, narrow; pedicels 1″–2″ long, axillary to small bracts; flowers purplish, 2″–3″ long, darker at the summit; spur rounded, ½″ long; nut 1″ in diameter, depressed-globose.

In waste places and on ballast, occasional about towns and villages, Nova Scotia to Florida and the Gulf States, and locally in the interior. Fugitive or adventive from Europe. Summer.

Fumaria parviflòra Lam., found on ballast about the seaports, may be distinguished by its still smaller paler flowers (2″), very narrow sharp and channeled leaf-segments, and its apiculate nut.

Family 32. CRUCÍFERAE B. Juss. Hort. Trian. 1759.

MUSTARD FAMILY.

Herbs, rarely somewhat woody, with watery acrid sap, alternate leaves, and racemose or corymbose flowers. Sepals 4, deciduous, or rarely persistent, the 2 outer narrow, the inner similar, or concave, or saccate at the base. Petals 4, hypogynous, cruciate, nearly equal, generally clawed. Stamens 6, hypogynous, tetradynamous, rarely fewer. Pistil 1, compound, consisting of 2 united carpels, the parietal placentae united by a dissepiment; style generally persistent, sometimes none; stigma discoid or usually more or less 2-lobed. Fruit a silique or silicle, generally 2-celled, rarely 1-celled, in a few genera indehiscent and lomentaceous. Seeds attached to both sides of the septum; endosperm none; cotyledons incumbent, accumbent or conduplicate.

About 185 genera and 1500 species, of wide geographic distribution.

The following wholly artificial key is designed to apply only to the species and genera of our Flora. The natural alliances of the genera are largely based on minute characters. The family is also known as BRASSICACEAE.

* **Pod a silique or silicle, dehiscent into two valves to the base.**

† *Pod an elongated-linear silique, or at least twice as long as wide.* (See also species of No. 29.)

1. Silique borne on a long stipe. 1. *Stanleya.*

2. Silique terete, 4-sided, or compressed, very short-stipitate, or sessile on the receptacle.

a. Silique tipped with the short slender style, or style none.

Seeds globose or oblong, wingless.

Seeds in 2 rows in each cell of the pod.

Pubescence, when present, of simple hairs. 17. *Roripa.*

Pubescence of forked hairs; leaves finely dissected. 30. *Sophia.*

Seeds in only 1 row in each cell.

Leaves auricled at the base; flowers violet. 16. *Iodanthus.*

Leaves reniform or cordate, undulate or repand; flowers white. 8. *Alliaria.*

Leaves dentate or pinnatifid; hairs simple; flowers yellow. 9. *Sisymbrium.*

Leaves finely dissected; pubescence of forked hairs; flowers yellow. 30. *Sophia.*

Leaves entire, or slightly toothed.

Stigma nearly entire, discoid; plant glabrous. 2. *Thelypodium.*

Stigma 2-lobed; plants more or less pubescent.

Flowers white or pink, small.

Valves of the silique nerved. 9. *Sisymbrium.*

Valves of the silique nerveless, rounded. 31. *Stenophragma.*

Flowers yellow. 33. *Erysimum.*

Flowers large, purple, purplish or white. 37. *Hesperis.*

Seeds flat, wingless or winged.

Siliques 4-angled, the valves keeled; flowers yellow. 15. *Barbarea.*

Siliques flat or flattish.

Valves of the silique nerveless.
Seeds winged; stem scape-like; flowers few. 22. *Leavenworthia.*
Seeds wingless; valves of the silique elastically dehiscent.
Stems leafy below or throughout. 18. *Cardamine.*
Stems leafless below, 2-4-leaved above. 19. *Dentaria.*
Valves of the silique 1-nerved or veiny, not elastically dehiscent. 32. *Arabis.*

b. Silique produced into a beak beyond the valves.
Beak conic, very short in no. 13.
Silique terete; seeds in 1 row. 12. *Brassica.*
Silique flat; seeds in 2 rows. 13. *Diplotaxis.*
Beak flat, sword-shaped. 11. *Sinapis.*

3. Silique elliptic or oblong, very flat, 2–3 times as long as broad, clearly stipitate.
Flowers violet; funiculus of the seed adnate to the septum of the pod. 20. *Lunaria.*
Flowers yellow; funiculus of the seed free from the septum. 21. *Selenia.*

†† *Pod an orbicular globose or oblong silicle, or but little more than twice as long as wide* (except in some species of no. 29).

1. Silicle globose, or flattened parallel with the septum.

a. Plants terrestrial, or not strictly aquatic.
+ Silicle globose, or terete-oblong, little or not at all compressed.
Plants not maritime.
Petals not 2-cleft.
Seeds minute, round, not flattened, in 2 rows in each cell. 17. *Roripa.*
Seeds flat; silicle inflated; plants stellate-pubescent, 24. *Lesquerella.*
Petals 2-cleft. 36. *Berteroa.*
Plants maritime, fleshy, northern. 7. *Cochlearia.*
++ Silicle didymous, its cells globose-inflated. 23. *Physaria.*
+++ Silicle compressed or flat, many-seeded. 29. *Draba.*
2–8-seeded.
Flowers yellow. 34. *Alyssum.*
Flowers white. 35. *Koniga.*
++++ Silicle pear-shaped, or obovoid, many-seeded. 27. *Camelina.*

b. Wholly submersed small aquatic; silicle globose or oblong. 3. *Subularia.*

Silicle flattened at right angles to the narrow septum.
Seeds several in each cell of the silicle.
Silicle triangular, obcuneate. 26. *Bursa.*
Silicle elliptic, wingless, its valves with a strong midvein. 25. *Hutchinsia.*
Silicle oblong or orbicular, winged all around. 6. *Thlaspi.*
Seeds solitary in each cell, compressed. 4. *Lepidium.*

* * **Pod indehiscent, short or elongated.**

Pod broader than long, more or less didymous. 5. *Coronopus.*
Pod globose, reticulated. 28. *Neslia.*
Pod elongated.
Pod of 2 joints, separating at maturity; plants maritime. 10. *Cakile.*
Pod constricted between the seeds, not jointed, beaked. 14. *Raphanus.*

1. STÁNLEYA Nutt. Gen. 2: 71. 1818.

Glabrous and glaucous, perennial tall mostly erect and branching herbs, with entire toothed lobed or pinnately divided leaves, and large yellow bractless flowers in elongated terminal racemes. Sepals linear, narrow. Petals narrow, long-clawed. Stamens 6, very nearly equal; anthers twisted. Ovary short-stipitate; style short or none. Siliques linear, long-stipitate, spreading or recurving, somewhat compressed, dehiscent, the valves with a strong midnerve. Seeds in 1 row in each cell, numerous, pendulous. Cotyledons straight, incumbent. [Named for Lord Edward Stanley, President of the Linnaean Society.]

About 3 species, of western North America.

1. Stanleya pinnàta (Pursh) Britton. Stanleya. (Fig. 1681.)

Cleome pinnata Pursh, Fl. Am. Sept. 739. 1814.
Stanleya pinnatifida Nutt. Gen. 2: 71. 1818.
Stanleya pinnata Britton, Trans. N. Y. Acad. Sci. 8: 62. 1888.

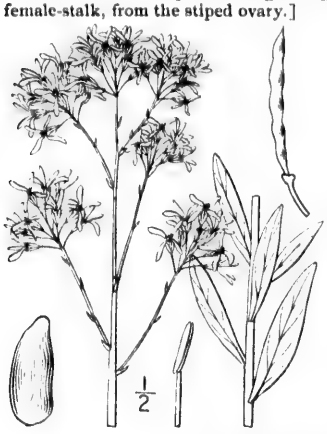
Stems stout, 2°–5° tall, sometimes decumbent. Lower leaves pinnatifid or pinnately divided, or entire, 5′–8′ long, 1′–3′ wide, long-petioled; upper leaves similar, or less divided, or narrowly oblong or lanceolate, entire, short-petioled and narrowed at the base; flowers numerous, showy; petals 8″–12″ long; filaments filiform, exserted; siliques 2′–3′ long, about 1″ thick, 2–3 times as long as their stipes, spreading, downwardly curved, somewhat constricted between the seeds when dry.

In dry soil, South Dakota and Nebraska to California, New Mexico and Arizona. Plant with the aspect of a *Cleome*. May–July.

2. THELYPÒDIUM Endl. Gen. 876. 1839.

[Pachypodium Nutt. 1838. Not Lindl. 1830.]

Erect glabrate biennial or perennial herbs, with simple entire toothed or pinnatifid leaves, and racemose purplish or white flowers. Siliques nearly terete, linear, with a short stipe in some species; valves 1-nerved, dehiscent; style short; stigma nearly entire. Seeds in 1 row in each cell of the pod, oblong, marginless; cotyledons obliquely incumbent. [Greek, female-stalk, from the stiped ovary.]



A genus of about 18 species, natives of North America. All but the following occur only in the western part of the continent.

1. Thelypodium integrifòlium (Nutt.) Endl. Entire-leaved Thelypodium. (Fig. 1682.)

Pachypodium integrifolium Nutt.; T. & G. Fl. N. A. 1: 96. 1838.
Thelypodium integrifolium Endl.; Walp. Rep. 1: 172. 1842.

Glabrous, erect, branching above, 3°–6° high. Leaves entire, thickish, the basal and lower ones petioled, narrowly oval or oblong, 2′–5′ long, the upper or sometimes nearly all the cauline ones sessile, linear, lanceolate or oblong-lanceolate, acute or acuminate; flowers pink, in short dense racemes; pedicels slender, spreading, 2″–4″ long; petals obovate or spatulate, long-clawed; pods narrowly linear, about 1′ long and ½″ wide; stipe very short; style slender, nearly 1″ long.

Nebraska and Wyoming to Oregon, Utah and New Mexico. July–Sept.

3. SUBULÀRIA L. Sp. Pl. 642. 1753.

Small annual aquatic submersed herbs, with basal linear subulate leaves, and minute racemose white flowers. Silicles short-stipitate, oblong or elliptic, the valves convex, ribbed on the back. Stigma sessile, entire. Seeds few, in 2 rows in each cell, marginless. Cotyledons incumbent, curved above their base. [Latin awl, from the awl-shaped leaves.]

A monotypic genus of the northern hemisphere.

1. Subularia aquática L. Water Awlwort. (Fig. 1683.)

Subularia aquatica L. Sp. Pl. 642. 1753.

Tufted, glabrous, 1′–4′ high, growing on the bottoms of lakes in shallow water. Flowering scape simple, lateral; leaves nearly cylindric, 6″–15″ long; flowers few, racemose, distant; pedicels slender, 1″–3″ long in fruit; petals white, minute; pods oblong or globose, 1″–1½″ long; seeds several in each cell; style none.

In clear, cold lakes, Newfoundland to British Columbia, Maine, New Hampshire and Ontario, south in the Rocky Mountains to Wyoming, and to California. Also in Europe and Siberia. June–Sept.

4. LEPÍDIUM L. Sp. Pl. 643. 1753.

Erect, or rarely diffuse, glabrous or pubescent herbs, with pinnatifid lobed or entire leaves and racemose white or whitish flowers. Stamens often fewer than 6. Petals short, sometimes none. Silicles oblong or obovate, flattened contrary to the partition, winged or wingless; valves keeled, dehiscent. Seeds solitary in each cell, flattened; cotyledons incumbent or rarely accumbent. [Greek, a little scale, from the flat scale-like pods.]

About 65 species, widely distributed. In addition to the following, about 16 others occur in western North America. Called indifferently Cress, Pepperwort or Pepper-grass.

Stem-leaves clasping by an auriculate base.
  Pods broadly ovate, winged. 1. *L. campestre.*
  Pods wingless, broader than long. 2. *L. Draba.*
Stem-leaves petioled or sessile, not clasping.
  Pods and seeds entirely wingless; petals none. 3. *L. ruderale.*

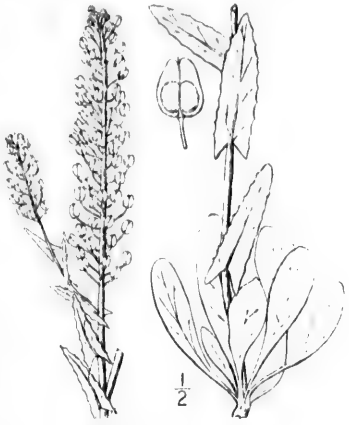
Pods slightly winged above, orbicular or oval, about 1″ broad; petals present or none.
Cotyledons accumbent; petals generally present. 4. *L. Virginicum.*
Cotyledons incumbent; petals minute or wanting. 5. *L. apetalum.*
Pods oblong, winged all around, longer than wide, about 2″ high. 6. *L. sativum.*

1. Lepidium campéstre (L.) R. Br. Field or Cow Cress. (Fig. 1684.)

Thlaspi campestre L. Sp. Pl. 646. 1753.
Lepidium campestre R. Br. in Ait. f. Hort. Kew, 4: 88. 1812.

Annual or biennial, erect, 10′–18′ high, branching above, hoary-pubescent with scale-like hairs or rarely nearly glabrous. Basal leaves oblong, or spatulate-oblong, entire, or pinnatifid in the lower part, obtuse, petioled, 2′–3′ long; stem-leaves oblong or lanceolate, entire or slightly dentate, sessile, clasping the stem by an auricled base; flowers white or yellowish; pedicels rather stout, spreading, 2″–4″ long in fruit; pods very numerous, forming dense elongated racemes, broadly ovate, slightly curved upward, about equalling their pedicels, or shorter, broadly winged at the apex, notched, tipped with a minute style.

In fields and waste places, New Brunswick and Ontario to Virginia, and on the Pacific Coast, a bad weed in the Middle States. Naturalized from Europe. May–July. Also called Yellow Seed, Mithridate Mustard, and Poor Man's Pepper.



2. Lepidium Dràba L. Hoary Cress. (Fig. 1685.)

Lepidium Draba L. Sp. Pl. 645. 1753.

Perennial, erect or ascending, 10′–18′ high, hoary-pubescent, branched at the inflorescence. Leaves oblong or lanceolate-oblong, obtuse, slightly dentate or entire, 1½′–2′ long, the lower petioled, the upper sessile and clasping; pedicels slender, ascending or spreading, 3″–6″ long in fruit; flowers white, about 1″–2″ broad; pods very broadly ovate, or cordate, 1½″ long, 2″ broad, arranged in short corymbose racemes; valves distinct, papillose, keeled, wingless, tipped with a slender style ½″–1″ long.

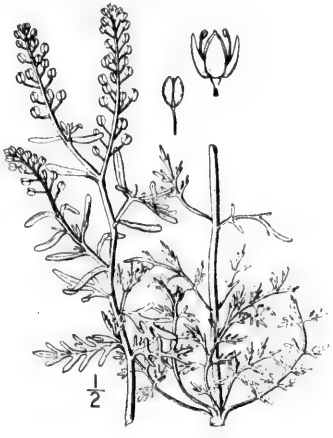
Near Astoria, N. Y., and on ballast about the seaports. Also in Colorado and California. Fugitive from Europe. Native also of Asia. April–June.

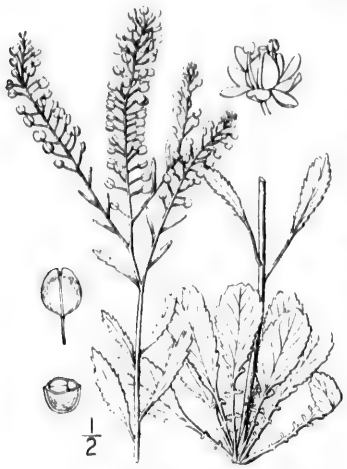
3. Lepidium ruderàle L. Roadside or Narrow-leaved Pepper-grass. (Fig. 1686.)

Lepidium ruderale L. Sp. Pl. 645. 1753.

Annual, erect, 6′–15′ high, glabrous, wiry, freely branching. Basal and lower leaves oblong in outline, 1′–4′ long, 1–2-pinnatifid into linear or oblong obtuse segments; upper leaves smaller, entire or with a few lobes; flowers ½″ broad or less, greenish; petals none; stamens 2; pods flat, not margined, about 1″ in length, short-oval or suborbicular; pedicels spreading or somewhat ascending, very slender, 1½″–2″ long in fruit; valves sharply keeled, barely winged; cotyledons incumbent.

In waste places, on ballast and along roadsides about the cities, Nova Scotia to Texas. Naturalized from Europe. Has the odor of Wart-cress. Occurs also in Australia. Summer.





5. Lepidium apétalum Willd. Apetalous Pepper-grass. (Fig. 1688.)

Lepidium apetalum Willd. Sp. Pl. 3:439. 1801. *Lepidium intermedium* A. Gray, Man. Ed. 2. 1856. Not A. Rich. 1847.

Much like *L. ruderale* and *L. Virginicum*. Basal leaves pinnatifid. Pods nearly orbicular, sometimes broader than long, slightly wing-margined above, about 1″ in diameter; flowering pedicels ascending, forming narrow racemes, or in fruit spreading; petals minute or wanting; cotyledons incumbent.

In dry soil, Maine and Ontario to California, south to Texas. Apparently naturalized from Europe. May–Aug.

Lepidium médium Greene (*L. intermedium* A. Gray, Pl. Wright. 1848. Not A. Rich.), with rather large white petals, orbicular pods 1½″ broad, and incumbent cotyledons, is found by Mr. Bicknell near New York city.

4. Lepidium Virginicum L. Wild Peppergrass. (Fig. 1687.

Lepidium Virginicum L. Sp. Pl. 643. 1753.

Similar to *L. ruderale*, often taller. Basal leaves obovate or spatulate in outline, less pinnatifid, generally with a large terminal lobe and numerous small lateral ones, all dentate, glabrous or slightly pubescent; stem-leaves lanceolate or oblong-linear, sharply dentate or entire, sessile, or the lower stalked; flowers ¼″–1″ broad, white; petals generally present, sometimes wanting in the later flowers; pedicels very slender, spreading, 2″–3″ long in fruit; pod flat, short-oval or orbicular, minutely winged above; cotyledons accumbent.

In fields and along roadsides, Quebec to Minnesota, south to Florida, Texas and Mexico. Also in the West Indies, and introduced as a weed into southern Europe. May–Nov.

6. Lepidium sativum L. Garden, Town, or Golden Pepper-grass or Cress. (Fig. 1689.)

Lepidium sativum L. Sp. Pl. 644. 1753.

Glabrous, bright green, stem slender, usually much branched, about 1° high. Lower leaves 2-pinnate, or pinnate with the segments lobed or pinnatifid, 3′–7′ long, the lobes entire or incised; upper leaves sessile or nearly so, entire or incised, much smaller; flowers in loose elongated racemes, about 1″ broad; petals present; silicles oval, about 2″ high and 1″ wide, equalling or longer than their pedicels, emarginate, winged all around; style very short.

In waste places, Quebec to New York and British Columbia. Escaped from gardens. Native of Europe. Much cultivated for its pungent foliage. Petals often pinkish. May–Aug.

5. CORÓNOPUS Gaertn. Fruct. & Sem. 2: 293. 1791.

Annual or biennial, diffuse herbs, with mostly pinnatifid leaves, and small whitish flowers. Silicles small, didymous, laterally compressed, sessile. Stamens often only 2 or 4. Valves of the capsule oblong or subglobose, obtuse at each end, indehiscent, falling away from the septum at maturity. Seeds 1 in each cell; cotyledons narrow, incumbent or conduplicate. [Greek, crow-foot, from the shape of the leaves.]

About 6 species, of wide geographic distribution in warm and temperate regions.

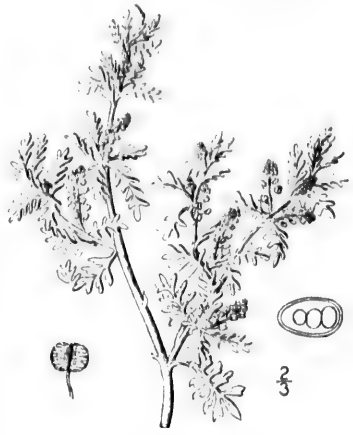
Pod rugose, not crested. 1. *C. didymus.*
Pod coarsely wrinkled, crested. 2. *C. Coronopus.*

1. Coronopus didymus (L.) J. E. Smith. Lesser Wart-cress. (Fig. 1690.)

Lepidium didymum L. Mant. 92. 1767.
Senebiera didyma Pers. Syn. 2: 185. 1807.
Coronopus didymus J. E. Smith, Fl. Brit. 3: 691. 1800.

Diffuse, tufted, spreading on the ground, sparingly pubescent. Stems 2′–15′ long, branching; leaves deeply 1–2-pinnatifid, the lower slender-petioled, the upper sessile; flowers minute, white, racemose; pedicels slender, 1″–1½″ long in fruit; pod didymous, about 1″ broad and slightly more than ½″ high; valves rugose, obtuse at each end and readily separating into 2 ovoid nutlets.

In waste places, Newfoundland to Florida, Missouri and Texas, west to California. Abundant in ballast about the northern seaports. Also throughout tropical America and widely distributed in the Old World. Summer. Naturalized from the South.



2. Coronopus Corónopus (L.) Karst. Wart or Swine's Cress. (Fig. 1691.)

Cochlearia Coronopus L. Sp. Pl. 648. 1753.
Senebiera Coronopus Poir. in Lam. Encycl. 7: 76. 1806.
Coronopus Coronopus Karst. Deutch. Fl. 673. 1880–83.

Diffuse, tufted, spreading on the ground, succulent, glabrous and glaucous, or with a few spreading hairs, branching. Stems 2′–15′ long; leaves similar to those of the last species, generally larger, sometimes less divided; flowers similar; pedicels stout, 1″ long or less; pod 2″ broad and about 1½″ high, flattish, rounded, apiculate at the summit, marked with coarse wrinkles which form a crest around the margin; valves not distinctly separate.

In waste places and on ballast, New Brunswick to Florida and the Gulf States. Fugitive or adventive from Europe. Sometimes called Buckshorn and Herb Ivy. Summer.

6. THLÁSPI L. Sp. Pl. 645. 1753.

Erect glabrous annual or perennial herbs, with entire or dentate leaves, the basal ones forming a rosette, those of the stem, or at least the upper ones, auriculate and clasping. Flowers white or purplish. Siliques obcuneate, obcordate, or oblong-orbicular, mostly emarginate, flattened at right angles to the narrow septum, crested or winged. Valves dehiscent. Seeds 2 or several in each cell, wingless. Cotyledons accumbent. [Greek, to flatten, from the flat pod.]

A genus of about 25 species, natives of temperate, arctic and alpine regions. In addition to the following, 2 others occur in arctic America, the Rocky Mountains and California.

Lower stem-leaves not clasping; seeds rugose. 1. *T. arvense.*
All the stem-leaves cordate-clasping; seeds smooth. 2. *T. perfoliatum.*

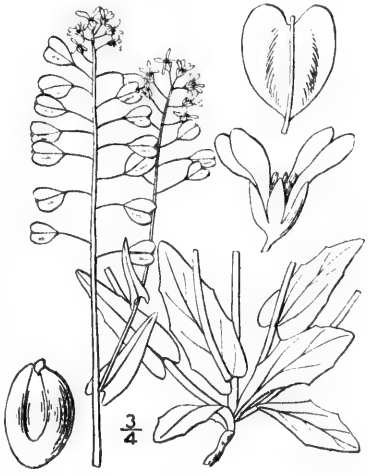
1. **Thlaspi arvénse** L. Field Penny-cress. (Fig. 1692.)

Thlaspi arvense L. Sp. Pl. 646. 1753.

Annual, erect, glabrous, 6′–18′ high, simple or branching above. Basal leaves petioled, oblanceolate, early deciduous; stem-leaves oblong or lanceolate, sparingly dentate, the upper clasping the stem by an auricled base, the lower merely sessile; flowers white, about 1″ long, ½″ broad; pedicels spreading or curved upward, slender, 5″–9″ long in fruit; pods nearly orbicular when ripe, 4″–6″ broad, very flat, broadly winged all around, notched at the apex, in long racemes; style minute, or none; seeds rugose, about 6 in each cell.

In waste places and on ballast, sparingly adventive or fugitive from Europe in the Eastern and Middle States, but abundant in Quebec and a bad weed in Manitoba and the Northwest Territory. Native also of northern Asia. June–Aug. Called also Bastard Cress.

2. **Thlaspi perfoliàtum** L. Perfoliate Penny-cress. (Fig. 1693.)



Thlaspi perfoliatum L. Sp. Pl. 646. 1753.

Annual, glabrous, branched at the base, stems commonly simple, slender, ascending or erect, 3′–7′ tall. Basal leaves ovate or suborbicular, often petioled; stem-leaves oblong or oblong-lanceolate, sessile, auricled at the base and clasping the stem, ½′–1′ long, 3″–6″ wide, obtuse or acute at the apex; pedicels filiform, spreading; silicle obovate-orbicular, 2″–3″ broad, rather narrowly winged, broadly notched at the summit; style short but manifest; seeds usually 4 in each cell.

Near Hamilton, Ontario. Fugitive or adventive from Europe. May–Aug.

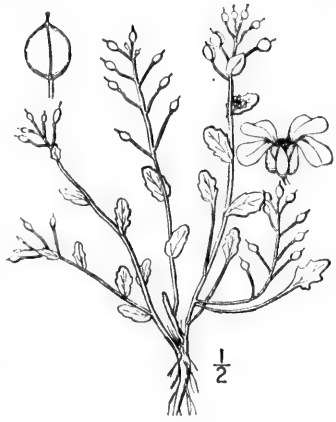
7. **COCHLEÀRIA** L. Sp. Pl. 647. 1753.

Annual or perennial maritime herbs, with simple alternate mostly fleshy leaves, and white or rarely purplish or yellowish racemose flowers. Silicle inflated, oblong or globose. Valves very convex, dehiscent. Stigma nearly simple, or capitate. Seeds several in each cell of the pod, usually in 2 rows, marginless. Cotyledons mainly accumbent. [Greek, spoon, from the shape of the leaves.]

A genus of about 25 species, not well understood, all natives of the colder parts of the north temperate zone. Besides the following, about three others are found on the arctic and northern Pacific coasts of North America.

1. Cochlearia officinàlis L. Scurvy-grass. (Fig. 1694.)

Cochlearia officinalis L. Sp. Pl. 647. 1753.
Cochlearia oblongifolia DC. Syst. Veg. 2: 363. 1821.



Annual or perennial, diffuse, branching, glabrous, somewhat fleshy, the branches 6′–12′ long. Lower leaves long-petioled, oblong, orbicular or reniform, obtuse, ½′–1′ long, dentate or entire; upper leaves ovate or oblong, sessile or short-petioled; flowers white, 2″–3″ broad; petals emarginate, or entire, thrice as long as the calyx; raceme elongating in fruit; pedicels ascending, 3″–4″ long in fruit; pods globose or ovoid, 2″–3″ long, smooth or reticulated; valves convex, strongly 1-nerved; style ½″ long.

Along seacoasts and rivers, Anticosti to Greenland and arctic America generally. Also in arctic Europe and Asia. Summer. A valued antiscorbutic salad.

8. ALLIÀRIA Adans. Fam. Pl. 2: 418. 1763.

Biennial or perennial, sparingly pubescent or glabrous, erect branching herbs, with broad dentate cordate or reniform leaves, and rather large racemose white flowers. Sepals short. Petals oblong, clawed. Stamens 6. Style very short, conic. Siliques linear, narrowly cylindric, terete or nearly so, slightly constricted between the seeds when dry, the valves with a strong midnerve, dehiscent from the base. Seeds oblong, striate, in 1 row in each cell; cotyledons flat, incumbent. [From *Allium*, garlic, on account of its similar odor.]

About 5 species, natives of Europe and Asia.

1. Alliaria Alliària (L.) Britton. Hedge-garlic. Garlic Mustard. (Fig. 1695.)

Erysimum Alliaria L. Sp. Pl. 660. 1753.
Sisymbrium Alliaria Scop. Fl. Carn. Ed. 2, 2: 26. 1772.
Alliaria Alliaria Britton, Mem. Torr. Club, 5: 167. 1894.

Erect, branching, 1°–3° high, glabrous or with a few hairs on the petioles and leaf-margins. Leaves reniform, broadly ovate or cordate, rarely nearly orbicular, crenate or undulate, the lower 2′–7′ broad on long petioles, the upper smaller, sessile or nearly so; pedicels 2″–3″ long, spreading and very stout in fruit; flowers white, 3″–4″ broad; pods glabrous, stiff, 1′–2′ long, 1″ thick, pointed, 4-sided when dry.

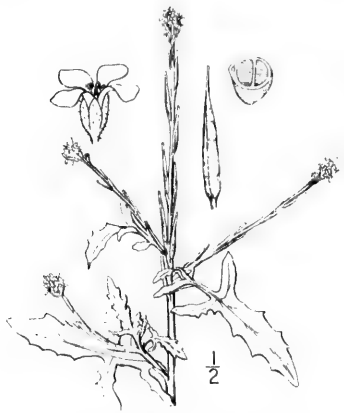
Waste places, woods and along roadsides, Ontario to southern New York, New Jersey and Virginia. Naturalized from Europe. Native also of northern Asia. May–June. Called also Jack-by-the-Hedge and Sauce-alone.

9. SISÝMBRIUM L. Sp. Pl. 657. 1753.

Annual or biennial, mostly tall and erect herbs, with simple entire lobed or pinnatifid leaves, and yellow white or rarely pink flowers. Petals generally elongated. Siliques elongated, linear, terete or flat, many-seeded. Valves mostly 3-nerved, dehiscent. Stigma nearly simple, or with 2 short lobes. Seeds in 1 row in each cell of the pod, marginless. Cotyledons incumbent. [Ancient Greek name of some crucifer.]

A genus of about 50 species, of wide geographic distribution. In addition to the following, about 8 other species are found in western North America.

Leaves runcinate-pinnatifid.
  Flowers yellow; pods ½′ long, appressed. 1. *S. officinale.*
  Flowers cream-color; pods 2′–4′ long, divergent. 2. *S. altissimum.*
Leaves oblong or spatulate, dentate; flowers white or pink. 3. *S. humile.*



1. Sisymbrium officinàle (L.) Scop. Hedge Mustard. (Fig. 1696.)

Erysimum officinale L. Sp. Pl. 660. 1753.
Sisymbrium officinale Scop. Fl. Carn. Ed. 2, 2: 26. 1772.

Erect, more or less pubescent, or glabrous, 1°–3° high, with rigid spreading branches. Leaves runcinate-pinnatifid, the lower petioled, the upper nearly sessile; lobes 3–6 pairs and an odd one, oblong, ovate or lanceolate, dentate, crenate or nearly entire, acutish or obtuse, the lower ones often recurved; pedicels 1″ long, erect in fruit; flowers yellow, 1½″ broad, pods 5″–7″ long, linear, acuminate, glabrous or slightly hairy, closely appressed to the stem; valves with a strong prominent midrib.

In waste places, common throughout our area, except the extreme north. Naturalized from Europe. Native also of northern Asia. May–Nov.

2. Sisymbrium altíssimum L. Tall Sisymbrium. (Fig. 1697.)

Sisymbrium altissimum L. Sp. Pl. 659. 1753.
Sisymbrium Sinapistrum Crantz, Stirp. Aust. Ed. 2, 52. 1769.
Sisymbrium Pannonicum Jacq. Coll. 1: 70. 1786.

Erect, 2°–4° high, freely branching, glabrous or nearly so. Lowest leaves runcinate-pinnatifid, petioled, the lobes lanceolate, often auriculate; upper leaves smaller, shorter petioled or nearly sessile, very deeply pinnatifid, the lobes linear or lanceolate, dentate or entire, often with a narrow projection on the lower side near the base; uppermost leaves often reduced to linear nearly entire bracts; flowers yellowish, about 3″ broad; pedicels 3″–4″ long, spreading or ascending, thickened in fruit; pods very narrowly linear, divergent, 2′–4′ long, ½″ wide; valves with a prominent midrib.

In waste places, Quebec and Ontario to Alberta and Missouri, and in ballast at New York. Adventive from Europe. A bad weed in the Northwest. Summer.

3. Sisymbrium hùmile Meyer. Low or Northern Rock-cress. (Fig. 1698.)

Arabis petraea Hook. Fl. Bor. Am. 1: 42. 1829. Not Lam.
Sisymbrium humile Meyer, in Ledeb. Fl. Alt. 3: 137. 1831.
Braya humilis Robinson, in Gray & Wats. Syn. Fl. 1: Part 1, 141. 1895.

Perennial, erect, 4′–10′ high, branching below, sparingly pubescent. Leaves spatulate, or oblanceolate, the lower obtuse, 1′–2′ long, narrowed into a petiole, sharply dentate or rarely entire, the upper smaller, narrower, often acute; flowers white or pink, 1½″–2″ broad; pedicels ascending or erect, 2″–3″ long in fruit; pods nearly terete, glabrous, narrowly linear, 6″–10″ long, ½″ wide; valves finely nerved; style ½″ long.

In rocky places, Anticosti, Willoughby Mountain, Vt., near Michipicoten Harbor, Lake Superior, to Alaska and Oregon. Species perhaps better referred to the arctic genus *Braya*, as maintained by Dr. B. L. Robinson. July.

10. CAKÌLE Gaertn. Fruct. et Sem. 2: 287. 1791.

Annual, diffuse or ascending, glabrous fleshy branching herbs, with purplish flowers. Siliques elongated, sessile on the calyx, flattened or ridged, indehiscent, 2-jointed, the joints 1-celled and 1-seeded. Style none; cotyledons accumbent. [Old Arabic name.]

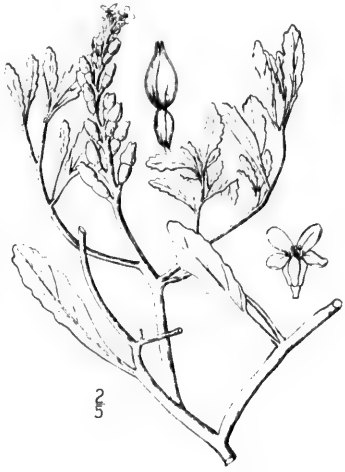
A genus of about 3 species, natives of sea and lake shores of Europe and North America, one of them extending into tropical regions.

1. Cakile edéntula (Bigel.) Hook. American Sea Rocket. (Fig. 1699.)

Bunias edentula Bigel. Fl. Bost. 157. 1814.
Cakile Americana Nutt. Gen. 2: 62. 1818.
Cakile edentula Hook. Fl. Bor. Am. 1: 59. 1830.

Very fleshy throughout, bushy-branched from a deep root, the lower branches spreading or ascending, the central ones erect, 1° in height or less. Leaves oblanceolate, or obovate, obtuse, sinuate-dentate or lobed, narrowed at the base, the lower 3′–5′ long; flowers light purple, 2″–3″ broad; petals long-clawed, more than twice the length of the sepals; pod 6″–10″ long, upper joint slightly longer than the lower, ovoid, flattened, narrowed into a beak above; lower joint obovoid, not flattened.

In sands of the seashore, Newfoundland to New Jersey and Florida, and along the Great Lakes, New York to Minnesota. Also on the California coast. Summer.

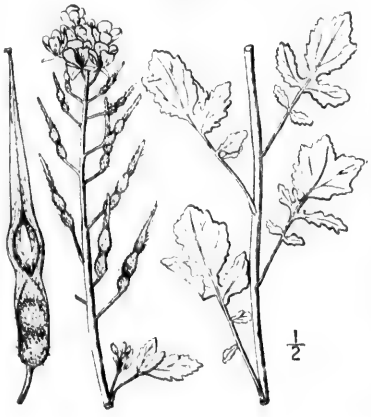


11. SINÀPIS L. Sp. Pl. 668. 1753.

Annual or biennial, usually erect, branching more or less hispid herbs, with pinnatifid or lobed leaves, and rather large, mostly yellow flowers in terminal racemes. Siliques linear, nearly terete, constricted between the seeds, sessile in the calyx, densely hispid in our species, tipped with a very long flat sword-like beak which sometimes contains a seed near its base. Seeds oblong or subglobose, not winged nor margined. Cotyledons conduplicate. [Name Greek, said to come from the Celtic for turnip.]

About 5 species, natives of southern Europe. Only the following is known from North America.

1. Sinapis álba L. White Mustard. (Fig. 1700.)



Sinapis alba L. Sp. Pl. 668. 1753.

Brassica alba Boiss. Voy. Espag. 2: 39. 1839–45.

Erect, 1°–2° high, more or less pubescent with stiff spreading hairs. Lower leaves 6′–8′ long, obovate in outline, deeply pinnatifid or pinnate, with a large terminal leaflet or lobe and several pairs of smaller lateral ones, dentate all around; uppermost leaves lanceolate or oblong, merely dentate, short-petioled; flowers yellow, 7″–9″ broad; pedicels rather stout, spreading, 5″–7″ long in fruit; pods spreading or ascending, terete, constricted between the seeds; beak flat, equalling or sometimes longer than the pod; seeds light brown.

In waste places and fields, occasional, mostly escaped from cultivation. Adventive from Europe. Native also of western Asia. Summer.

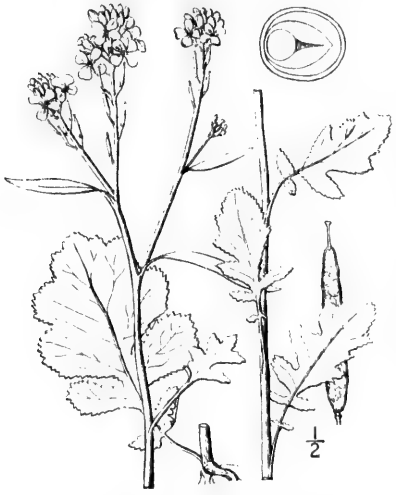
12. BRÁSSICA L. Sp. Pl. 666. 1753.

Erect branching annual biennial or perennial herbs, with pinnatifid basal leaves, those of the stem dentate or often nearly entire, and showy yellow flowers in elongated racemes. Siliques elongated, sessile, terete or 4-sided, tipped with an indehiscent conic usually 1-seeded beak. Valves convex, 1–3-nerved. Stigma truncate or 2-lobed. Seeds in 1 row in each cell, oblong, marginless; cotyledons conduplicate. [Latin name of the Cabbage.]

A genus of about 80 species, natives of Europe, Asia and northern Africa.

None of the leaves clasping the stem, the upper sessile.
Pods slender, ½′–1′ long, appressed. 1. *B. nigra.*
Pods rather slender, 1′–2′ long, erect, not appressed, on slender pedicels 3″–5″ long. 2. *B. juncea.*
Pods spreading or ascending at maturity, on stout pedicels 2″–3″ long. 3. *B. Sinapistrum.*
Upper leaves clasping by an auricled base. 4. *B. campestris.*

1. Brassica nìgra (L.) Koch. Black Mustard. (Fig. 1701.)



Sinapis nigra L. Sp. Pl. 668. 1753.

Brassica nigra Koch, in Roehl, Deutsche Fl. Ed. 3, 4: 713. 1833.

Erect, 2°–7° high, freely and widely branching, pubescent or glabrate. Lower leaves slender-petioled, deeply pinnatifid, with 1 terminal large lobe and 2–4 smaller lateral ones, dentate all around; upper leaves shorter-petioled or sessile, pinnatifid or dentate, the uppermost reduced to lanceolate or oblong entire blades; flowers bright yellow, 3″–5″ broad; pedicels slender, appressed, 2″ long in fruit; pods narrowly linear, 4-sided, 5″–7″ long, ½″ wide, appressed against the stems and forming very narrow racemes; beak slender, 1″–2″ long; seeds dark brown.

In fields and waste places, common throughout our area. Naturalized from Europe. Native also of central Asia. June–Nov.

2. Brassica júncea (L.) Cosson. Indian Mustard. (Fig. 1702.)

Sinapis juncea L. Sp. Pl. 668. 1753.

Brassica juncea Cosson, Bull. Soc. Bot. France, 6: 609. 1859.

Annual, pale, glabrous, or slightly pubescent, somewhat glaucous, stem erect, usually stout, 1°–4° tall. Lower leaves runcinate-pinnatifid and dentate, long-petioled, 4′–6′ long, the uppermost sessile or nearly so, lanceolate or linear, commonly entire, much smaller; flowers 6″–9″ wide; fruiting racemes sometimes 1° long; pods erect or nearly so, on slender ascending pedicels 3″–5″ long, not appressed to the axis, 1′–2′ long, rather more than 1″ wide, the conic-subulate empty beak one-fourth to one-third the length of the body.

In waste places, New Hampshire and Pennsylvania to Michigan and Virginia. Adventive or naturalized from Asia. Also introduced into the West Indies and South America. May–July.

3. Brassica arvénsis (L.) B.S.P. Charlock. Wild Mustard. (Fig. 1703.)

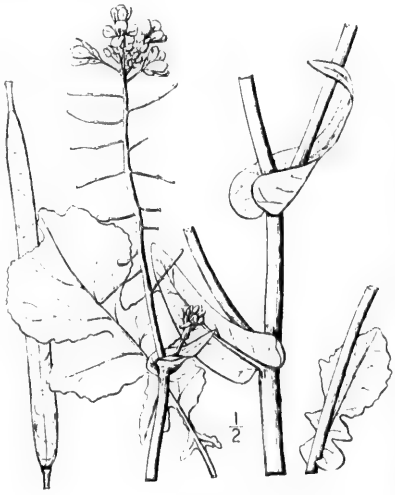
Sinapis arvensis L. Sp. Pl. 668. 1753.

Brassica Sinapistrum Boiss. Voy. Espagne, 2: 39. 1839–45.

Brassica arvensis B.S.P. Prel. Cat. N. Y. 1888.

Erect, 1°–2° high, hispid with scattered stiff hairs, or glabrate, branching above. Leaves similar to those of *B. nigra* but generally not so much pinnatifid; flowers 6″–8″ broad; pedicels stout, 2″–3″ long in fruit; pods glabrous, spreading or ascending, somewhat constricted between the seeds, 6″–8″ long, 1″ wide, tipped with a flattened elongated-conic often 1-seeded beak 5″–6″ long, the valves strongly nerved.

In fields and waste places, frequent or occasional. Adventive from Europe and widely distributed as a weed. English names, Corn Mustard, Chadlock, Corn- or Field-Kale. May–Nov.



4. Brassica campéstris L. Turnip. Wild Navew. (Fig. 1704.)

Brassica campestris L. Sp. Pl. 666. 1753.

Stem 1°–3° high, branching, glabrous and glaucous, or sometimes slightly pubescent below. Lower leaves petioled, pubescent, more or less lobed or pinnatifid; upper leaves lanceolate or oblong, acute or obtusish, sessile and clasping the stem by an auricled base, entire or dentate, glabrous; flowers bright yellow, 4″–5″ broad; pedicels spreading or ascending, often 1′ long in fruit; pods 1½′–2′ long, tipped with a beak 4″–5″ long.

In cultivated grounds, sometimes persisting for a year or two, and occasional in waste places eastward. Fugitive from Europe. April–Oct.

Brassica Nàpus L. (RAPE) has all the leaves glabrous, and is sometimes found in waste places.

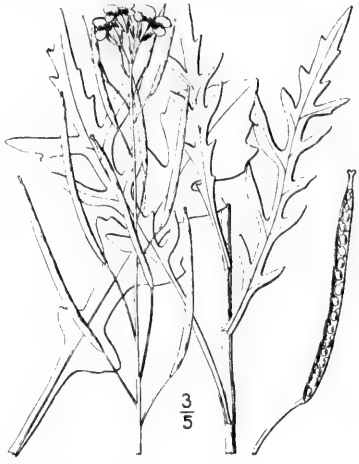
13. DIPLOTÁXIS DC. Syst. 2: 628. 1821.

Annual or perennial herbs, similar to the Mustards, with basal and alternate pinnatifid or lobed leaves, and rather large yellow flowers in terminal racemes. Silique elongated, linear, flat or flattish, short-beaked or beakless, the valves mostly 1-nerved. Style usually slender. Seeds in 2 complete or incomplete rows in each cavity of the silique, marginless; cotyledons conduplicate. [Greek, referring to the double rows of seeds.]

About 20 species, natives of the Old World, the following fugitive or adventive in our territory. The genus is often united with *Brassica*.

Perennial; stem leafy nearly to the inflorescence. 1. *D. tenuifolia*.
Annual; leaves mostly basal, oblanceolate. 2. *D. muralis*.

1. Diplotaxis tenuifòlia (L.) DC. Wall Rocket. (Fig. 1705.)



Sisymbrium tenuifolium L. Cent. Pl. 1: 18. 1755.

Diplotaxis tenuifolia DC. Syst. 2: 632. 1821.

Perennial, glabrous or nearly so, somewhat glaucous, stem branched, bushy, leafy, 1°–4° high. Leaves pinnatifid, often nearly to the midrib, thin, the lower 3′–6′ long, the lobes distant or close together, mostly narrow; racemes elongated in fruit, loose; flowers 8″–10″ broad; pods 1′–1¼′ long, about 1¼″ wide, nearly erect; pedicels slender, 10″–20″ long in fruit.

In waste places and ballast, Nova Scotia to New Jersey and Pennsylvania, chiefly about the cities. June–Aug.

2. Diplotaxis muràlis (L.) DC. Sand Rocket. (Fig. 1706.)

Sisymbrium murale L. Sp. Pl. 658. 1753.

Diplotaxis muralis DC. Syst. 2: 634. 1821.

Annual, branched from the base, sparingly hispid or glabrous, the slender branches 1°–2° high, leafy only below. Leaves oblanceolate, sinuate-lobed or sometimes pinnatifid, 2′–4′ long, narrowed at the base, mostly slender-petioled; fruiting racemes long, loose; flowers 6″–8″ broad; pod about 1′ long and 1″ wide, erect, flattish; fruiting pedicels 4″–8″ long.

In waste places and ballast, range of the preceding species. June–Aug.

14. RÁPHANUS L. Sp. Pl. 669. 1753.

Erect branching mainly biennial herbs, with lyrate leaves and showy flowers. Silique elongated-linear, coriaceous, fleshy or corky, constricted or continuous and spongy between the seeds, indehiscent. Style slender. Seeds subglobose; cotyledons conduplicate. [Greek, quick-appearing, from its rapid germination.]

A genus of about 6 species, natives of Europe and temperate Asia.

Flowers yellow, fading white; pod longitudinally grooved, 4–10-seeded. 1. *R. Raphanistrum.*
Flowers pink or white; pod not longitudinally grooved, 2–3-seeded. 2. *R. sativus.*

1. Raphanus Raphanistrum L. Wild Radish. Jointed or White Charlock. (Fig. 1707.)

Raphanus Raphanistrum L. Sp. Pl. 669. 1753.

Biennial or annual, erect or ascending from a slender root, freely branching, 1°–2½° high, sparsely pubescent with stiff hairs especially below, or rarely glabrous throughout. Basal and lower leaves deeply lyrate-pinnatifid, 4′–8′ long, with a large terminal lobe and 4–6 pairs of successively smaller lateral ones, all crenate or dentate; upper leaves few, small, oblong; flowers 6″–9″ broad, yellow, fading to white, purplish-veined; pedicels 3″–8″ long in fruit; pods 1′–1½′ long, 6–10 seeded, nearly cylindric when fresh, constricted between the seeds when dry, longitudinally grooved, tipped with a conic beak 5″–10″ long.

In fields and waste places, Pennsylvania to Ontario and New Brunswick. Often a troublesome weed. Introduced also in British Columbia. Naturalized from Europe. Native also of northern Asia. Rarely the flowers are purplish throughout. Erroneously called Rape. Summer.

2. Raphanus sativus L. Garden Radish. (Fig. 1708.)

Raphanus sativus L. Sp. Pl. 669. 1753.

Similar to the last, but flowers pink or white. Root deep, fusiform or napiform, fleshy. Pods fleshy, 2–3-seeded, not longitudinally grooved, often equalled or exceeded by the long conic beak.

Cultivated and occasionally spontaneous for a year or two in gardens or fields, rarely in waste places. Native of Asia. June–Oct.

15. BARBARÈA R. Br. in Ait. Hort. Kew. Ed. 2, **4**: 109. 1812.

Erect glabrous biennial or perennial branching herbs, with angled stems, pinnatifid leaves, and racemose yellow flowers. Stamens 6. Silique elongated, linear, 4-angled. Valves keeled or ribbed. Style short. Stigma 2-lobed or nearly capitate. Seeds in 1 row in each cell, flat, oblong, marginless; cotyledons accumbent. [Name from St. Barbara, to whom the plant was anciently dedicated.]

A genus of about 6 species, natives of the temperate zones.

Pods obtusely 4-angled, slender-pedicelled; leaf-segments 1–4 pairs.
  Pods divergent or ascending. 1. *B. Barbarea.*
  Pods erect, appressed. 2. *B. stricta.*
Pods sharply 4-angled, stout-pedicelled; leaf-segments 4–8 pairs. 3. *B. praecox.*

1. Barbarea Barbarèa (L.) MacM. Yellow Rocket or Cress. (Fig. 1709.)

Erysimum Barbarea L. Sp. Pl. 660. 1753.
Barbarea vulgaris R. Br. in Ait. Hort. Kew. Ed. 2, 4: 109. 1812.
Barbarea vulgaris var. *arcuata* A. Gray, Man. Ed. 2, 35. 1856.
Barbarea Barbarea MacM. Met. Minn. 259. 1892.

Tufted, stems erect, 1°–2° high. Lower leaves petioled, 2′–5′ long, pinnatifid; terminal division much larger than the 1–4 pairs of lateral ones, all oval or obovate, repand-toothed or sometimes entire; upper leaves sessile or nearly so, sometimes clasping; flowers bright yellow, 3″–4″ broad; pods spreading or ascending, about 1′ long, obscurely 4-angled; pedicels about 2″ long.

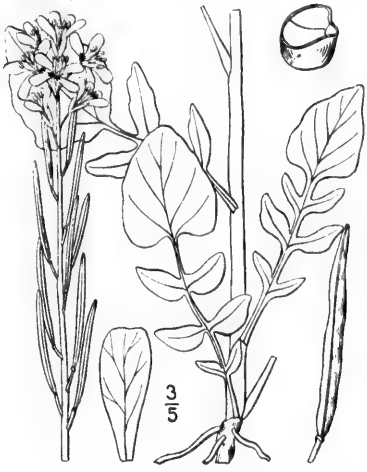
In fields and waste places, Labrador to southern New York and Virginia and locally in the interior. Also on the Pacific coast. Naturalized from Europe. Leaves thickish, shining above. April–June. Also called Bitter, Winter or Rocket Cress.

2. Barbarea stricta Andrz. Erect-fruited Winter Cress. (Fig. 1710.)

Barbarea stricta Andrz. in Bess. Enum. Pl. Volh. 72. 1821.
Barbarea vulgaris var. *stricta* A. Gray, Man. Ed. 2, 35. 1856.

Similar to the preceding species, about equally tall. Lateral segments of the leaves comparatively larger; pods obtusely or obscurely 4-angled, about 1′ long, erect and appressed against the rachis of the raceme on erect or ascending slender pedicels.

In fields and waste places, Quebec to Minnesota and the Northwest Territory, south to Florida and Nebraska. The plant is certainly naturalized from Europe in the East, but is reported as indigenous in the Northwest. It is very abundant in northern Europe and Asia. Leaves shining above. April–June.



3. Barbarea praècox (J. E. Smith) R. Br. Early Winter or Belle Isle Cress. (Fig. 1711.)

Erysimum praecox J. E. Smith, Fl. Brit. 2: 707. 1800.
Barbarea praecox R. Br. in Ait. Hort. Kew. Ed. 2, 4: 109. 1812.

Closely resembles the last species. Divisions of the leaves more numerous (4–8 pairs); pods sharply 4-sided, slightly compressed, 1½′–3′ long, borne on stout pedicels.

In waste places, southern New York, Pennsylvania and southward. Adventive from Europe. Sometimes cultivated for salad. Referred by Hooker and Thomson (Journ. Linn. Soc. 5: 139) to a variety of *B. vulgaris* and so regarded by Bentham and other English botanists, but its characters appear to be constant. In the Southern States called Scurvy-grass. April–June.

16. IODÁNTHUS T. & G.; A. Gray, Man. 32. 1848.

A glabrous erect perennial herb, with dentate leaves auricled at the base, or the lower and basal ones lyrate-pinnatifid, and violet or white flowers in panicled racemes. Sepals much shorter than the petals, the inner ones slightly gibbous at the base. Petals long-clawed. Style stout; stigma subcapitate. Silique linear-cylindric, somewhat constricted between the seeds. Seeds oblong, rounded, in 1 row in each cell. Cotyledons accumbent. [Greek, violet-colored flower.]

A monotypic genus of southeastern North America.

1. Iodanthus pinnatífidus (Michx.) Steud. Iodanthus. Purple or False Rocket. (Fig. 1712.)

Hesperis (?) *pinnatifida* Michx. Fl. Bor. Am. 2: 31. 1803.
Iodanthus hesperidoides T. & G.; A. Gray, Gen. Ill. 1: 134. 1848.
Thelypodium pinnatifidum S. Wats. Bot. King's Exp. 25. 1871.
Iodanthus pinnatifidus Steud. Nomencl. Ed. 2, 812. 1841.

Glabrous, stem slender, 1°–3° high, branching above. Lower leaves ovate or oblong (occasionally cordate), 2′–8′ long, dentate, tapering into a margined petiole which is clasping and auriculate at the base, the lower part of the blade often pinnatifid into 2–6 pairs of small oblong segments; stem-leaves similar or merely dentate, narrower, sometimes ovate-lanceolate, the upper nearly sessile; flowers numerous, 3″–4″ broad; pedicels spreading, 2″–3″ long in fruit; pods linear, 1′–1½′ long, ½″ wide, spreading or ascending; style stout, 1″ long.

On river banks, western Pennsylvania to Minnesota, south to Kentucky, Louisiana and Texas. May–June.

17. RORÌPA* Scop. Fl. Carn. 520. 1760.

[NASTURTIUM R. Br. in Ait. Hort. Kew. Ed. 2, 4: 109. 1812.]

Branching herbs, with simple or pinnate lobed dissected or rarely entire leaves, and yellow or white flowers. Sepals spreading. Stamens 1–6. Pods short or elongated, terete or nearly so. Stipe none. Valves generally 1-nerved. Style short or slender. Stigma 2-lobed or nearly entire. Seeds turgid, minute, in 2 rows in each cell (very rarely in 1 row). Cotyledons accumbent. [Name unexplained.]

About 25 species, of wide geographic distribution, most abundant in the north temperate zone. Besides the following, there are about 5 other North American species, natives of the southern and western parts of the continent. The white-flowered species perhaps represent different generic types.

Flowers yellow.
  Flowers and pods distinctly pedicelled.
    Plants perennial by creeping or subterranean branches.
      Leaves pinnately divided; style very short; naturalized European species. 1. *R. sylvestris.*
      Leaves pinnatifid; style slender; native western species. 2. *R. sinuata.*
    Plants annual or perennial, with fibrous roots.
      Pods 1″–5″ long, straight.
        Fruiting pedicels 1″–2″ long; stem diffuse.
          Pods linear to oblong, 3″–5″ long. 3. *R. obtusa.*
          Pods subglobose, about 1″ in diameter. 4. *R. sphaerocarpa.*
        Fruiting pedicels 2″–4″ long; stem erect.
          Stem nearly or quite glabrous; pods linear or linear-oblong. 5. *R. palustris.*
          Stem hispid-pubescent; pods globose or oval. 6. *R. hispida.*
      Pods 4″–7″ long, strongly curved upward. 7. *R. curvisiliqua.*
  Flowers and pods very nearly sessile. 8. *R. sessiliflora.*
Flowers white.
  Leaves pinnately divided; pods linear. 9. *R. Nasturtium.*
  Leaves simple or the lower pinnatifid; pods oblong or globose.
    Terrestrial, tall; leaves crenate, or the lower lobed or pinnatifid. 10. *R. Armoracia.*
    Aquatic; immersed leaves finely dissected. 11. *R. Americana.*

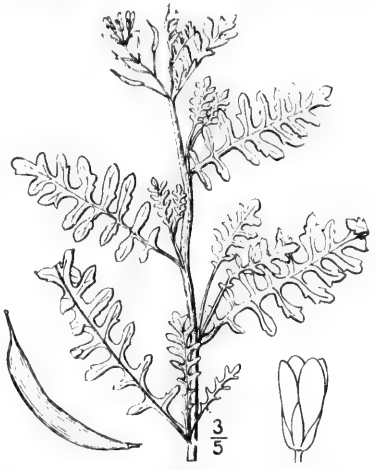
*Originally spelled *Rorippa*, but corrected to this form by Adanson in 1763.

1. Roripa sylvéstris (L.) Bess. Creeping Yellow Water-cress. (Fig. 1713.)

Sisymbrium sylvestre L. Sp. Pl. 657. 1753.
Nasturtium sylvestre R. Br. in Ait. Hort. Kew. Ed. 2, 4: 110. 1812.
Roripa sylvestris Bess. Enum. 27. 1821.

Perennial, glabrous; stems creeping, branches ascending. Leaves pinnately divided or deeply pinnatifid, petioled, 3′–5′ long, 1′–2′ broad, ovate in outline, the divisions obovate, or oblong, toothed or lobed, the terminal one often somewhat larger than the lateral; pedicels slender, 3″ long; flowers yellow, 3″–4″ broad; pod linear, 4″–6″ long; style very short.

In low grounds and waste places, occasional from Massachusetts to Virginia and Ohio. Adventive or naturalized from Europe. Native also of northern Asia. Summer.

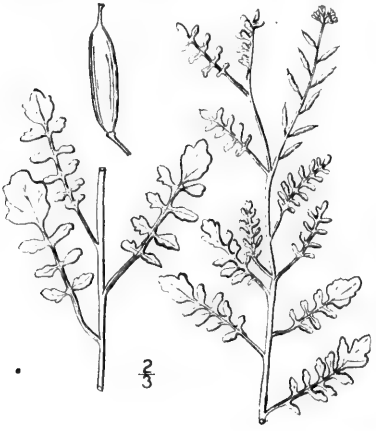


2. Roripa sinuàta (Nutt.) A. S. Hitchcock. Spreading Yellow-cress. (Fig. 1714.)

Nasturtium sinuatum Nutt.; T. & G. Fl. N. A. 1: 73. 1838.
Roripa sinuata A. S. Hitchcock, Spring Fl. Manhattan, 18. 1894.

Perennial, diffuse, glabrous, the branches ascending. Leaves oblong, lanceolate, or oblanceolate, 2′–3′ long, ½′–1′ wide, pinnatifid, the lobes linear or oblong, obtuse, entire, or sparingly dentate; pedicels slender, 3″ long; flowers yellow, about 2″ broad; pods linear-oblong, sometimes slightly curved, 4″–6″ long; style slender, 1″–1½″ long.

Banks of the Mississippi, Minnesota to Missouri, west to the Sierra Nevada. The eastern forms referred to this species may be specifically distinct. June–Sept.



3. Roripa obtùsa (Nutt.) Britton. Blunt-leaved Yellow-cress. (Fig. 1715.)

Nasturtium obtusum Nutt.; T. & G. Fl. N. A. 1: 74. 1838.
Roripa obtusa Britton, Mem. Torr. Club, 5: 169. 1894.

Annual or biennial, diffuse, much branched, the branches ascending or erect. Leaves oblong or oblanceolate, 2′–4′ long, pinnately divided, or pinnatifid, the lobes obtuse, repand-toothed, or sometimes entire; pedicels 1″–2″ long; flowers yellow, 1″ broad or less; pods narrowly oblong, or linear, 3″–5″ long, ascending; style ½″ long.

In low grounds, Michigan, south to Texas, west to the Pacific Coast. April–Aug.

4. Roripa sphaerocàrpa (A. Gray) Britton. Round-fruited Cress. (Fig. 1716.)

Nasturtium sphaerocarpum A. Gray, Mem. Am. Acad. **4**: 6. 1849.

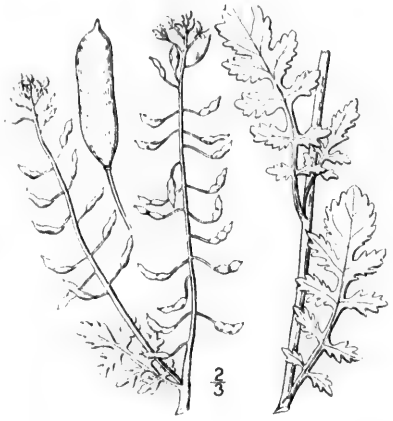
Roripa sphaerocarpa Britton, Mem. Torr. Club, **5**: 170. 1894.

Glabrous, stem erect or decumbent, usually branched, slender, 4′–12′ high. Leaves oblong, obtuse, the lower lyrate-pinnatifid or incised, the upper sometimes nearly entire, all petioled or the upper subsessile; petioles narrowly margined, somewhat clasping at the base; flowers 1″ broad or less; petals yellow, about equalling the sepals; silicle globose, about 1″ in diameter, about as long as its pedicel; style very short.

Illinois to Kansas, Texas and California. June–July.

5. Roripa palústris (L.) Bess. Marsh or Yellow Water-cress. (Fig. 1717.)

Sisymbrium amphibium var. *palustre* L. Sp. Pl. 657. 1753.
Nasturtium terrestre R. Br. in Ait. Hort. Kew. Ed. 2, **4**: 110. 1812.
Nasturtium palustre DC. Syst. **2**: 191. 1821.
Roripa palustris Bess. Enum. 27. 1821.



Annual, or biennial, erect, branching, glabrous or slightly pubescent, 1°–3½° high. Lower leaves petioled, 3′–7′ long, oblong or oblanceolate, deeply pinnatifid (rarely only dentate), the lobes acutish or blunt, repand or toothed; upper leaves nearly sessile, dentate or somewhat lobed; base of the petiole often dilated and clasping; pedicels slender, 3″ long in fruit; flowers yellow, 2″–3″ broad; pods linear, or linear-oblong, 2–6 times as long as thick, about equalling the pedicels, spreading or curved; style ½″ long or less.

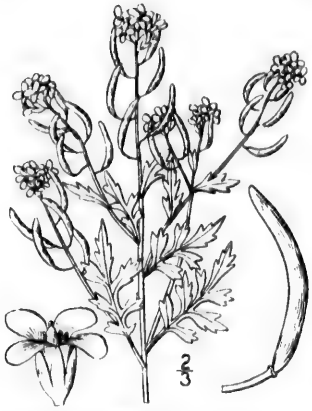
In wet places, nearly throughout North America except the extreme north. Apparently naturalized from Europe on the eastern side of the continent, but evidently indigenous in the west. May–Aug.

6. Roripa hispida (Desv.) Britton. Hispid Yellow-cress. (Fig. 1718.)

Brachylobus hispidus Desv. Journ. Bot. **3**: 183. 1814.
Nasturtium hispidum DC. Syst. **2**: 201. 1821.
Nasturtium palustre var. *hispidum* A. Gray, Man. Ed. 2, 30. 1856.
Roripa hispida Britton, Mem. Torr. Club, **5**: 169. 1894.
Roripa palustris hispida Rydberg, Contr. U. S. Nat. Herb. **3**: 149. 1895.

Resembling the preceding species, but often stouter, sometimes 4° high, the stem, branches, petioles and veins of the lower surfaces of the leaves hirsute with spreading hairs. Leaves lyrate-pinnatifid; pedicels slender, spreading, about 3″ long, longer than the globose or ovoid pod, which is 1–2 times as long as thick.

In wet places, New Brunswick to British Columbia, Florida and New Mexico. Lower leaves sometimes 10′ long. Summer.



7. Roripa curvisiliqua (Hook.) Bessey. Curved-fruited Cress. (Fig. 1719.)

Sisymbrium curvisiliqua Hook. Fl. Bor. Am. 1: 61. 1830.
Nasturtium curvisiliqua Nutt.; T. & G. Fl. N. A. 1: 73. 1838.
Roripa curvisiliqua Bessey, Mem. Torr. Club, 5: 169. 1894.

Annual or biennial, sparingly pubescent or glabrous, stems erect or ascending, usually much branched, 6′–18′ high. Leaves oval or oblanceolate in outline, pinnatifid, pinnately lobed or toothed, the lower 1′–3′ long; flowers light yellow, 2″ broad in short racemes; petals rather longer than the sepals; style short; pods linear, 4″–7″ long, less than 1″ wide, strongly curved upward; pedicels spreading or ascending, 1″–2″ long.

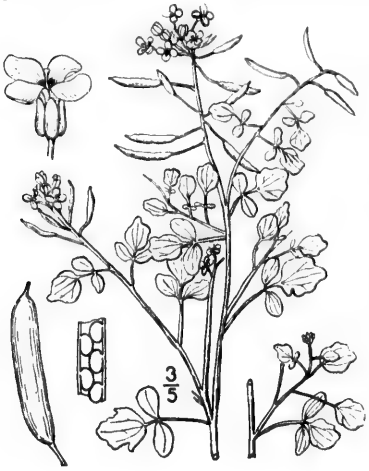
In moist soil, Nebraska (according to Bessey), to British Columbia and California. May–Aug.

8. Roripa sessiliflòra (Nutt.) A. S. Hitchcock. Sessile-flowered Cress. (Fig. 1720.)

Nasturtium sessiliflorum Nutt.; T. & G. Fl. N. A. 1: 73. 1838.
Roripa sessiliflora A. S. Hitchcock, Spring Fl. Manhattan, 18. 1894.

Annual or biennial, erect, glabrous, 8′–20′ high, sparingly branched above, the branches ascending. Leaves petioled, the lower 3′–4′ long, obovate or oblong, obtuse, crenate, lobed or pinnatifid, with obtuse lobes; flowers yellow, 1″ broad, nearly sessile; pods very slightly pedicelled, spreading or ascending, 3″–6″ long, 1″ broad, narrowly oblong; style very short; seeds minute, mostly in 2 rows in each cell.

In low grounds, Tennessee, western Illinois and Iowa to Kansas, south to Florida and Texas. April–June.



9. Roripa Nastúrtium (L.) Rusby. Water-cress. (Fig. 1721.)

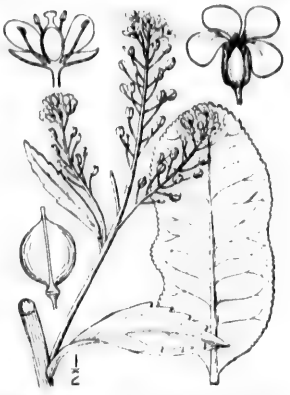
Sisymbrium Nasturtium L. Sp. Pl. 657. 1753.
Nasturtium officinale R. Br. in Ait. Hort. Kew. Ed. 2, 4: 110. 1812.
Roripa Nasturtium Rusby, Mem. Torr. Club, 3: Part 3, 5. 1893.

Aquatic, glabrous, branching, floating or creeping, rooting from the nodes. Leaves odd-pinnate, of 3–9 segments, the terminal one larger than the lateral, all obtuse, ovate or oval, or the terminal one nearly orbicular; racemes elongating in fruit; flowers white, 2″–2½″ broad; petals twice the length of the calyx; pods 6″–16″ long, 1″ wide, spreading and slightly curved upward, on pedicels of about their length; seeds distinctly in 2 rows.

In brooks and streams, Nova Scotia to Manitoba, south to Virginia and Missouri. Common in most districts. Naturalized from Europe. Native also of northern Asia and introduced into South America and western North America. Widely cultivated for salad. April–Nov.

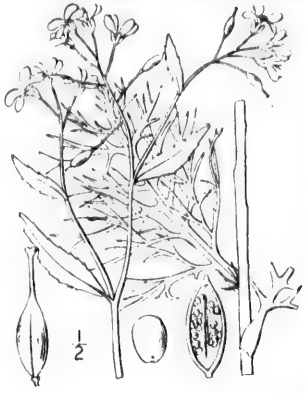
10. Roripa Armoràcia (L.) A. S. Hitchcock. Horseradish. (Fig. 1722.)

Cochlearia Armoracia L. Sp. Pl. 648. 1753.
Nasturtium Armoracia Fries; A. Gray, Man. Ed. 2, 31. 1856.
Roripa Armoracia A. S. Hitchcock, Spring Fl. Manhattan, 18. 1894.



Erect, 2°–3° high, from deep thick roots. Basal leaves on thick petioles 6′–12′ long, the blade oblong, often nearly as long, crenate, sinuate or even pinnatifid, rough but glabrous; upper leaves smaller, sessile, narrowly oblong or lanceolate, crenate or dentate; racemes paniculate, terminal and axillary; pedicels very slender, ascending, 2″–3″ long; flowers white, showy, 2″–4″ broad; pods oblong or nearly globose; style very short.

Escaped from gardens into moist grounds, especially along streams. Frequent. Adventive from Europe. The roots furnish the well-known sauce. Summer.



11. Roripa Americàna (A. Gray) Britton. Lake Water-cress. (Fig. 1723.)

Nasturtium natans var. *Americanum* A. Gray, Ann. Lyc. N. Y. 3: 223. 1836.
Nasturtium lacustre A. Gray, Gen. Ill. 1: 132. 1848.
Roripa Americana Britton, Mem. Torr. Club, 5: 169. 1894.
Neobeckia aquatica Greene, Pittonia, 3: 95. 1896.

Aquatic, branching, 1°–2° long. Immersed leaves 2′–3′ long, pinnately dissected into numerous filiform divisions; emersed leaves oblong, obtuse or acute, 1′–3′ long, entire, serrate or lobed; pedicels 3″–4″ long, slender, widely spreading; flowers white; petals longer than the sepals; style slender, about 1″ long; pods ovoid, 2″ long, 1-celled.

In lakes and slow streams, Ferrisburg, Vt.; western Quebec and Ontario, northern New York; Sussex Co., N. J., to Minnesota, south to Florida and Louisiana. Local. Much resembles *N. amphibium* of Europe, except in its white flowers and smaller upper leaves, which are readily detached from the stem. Summer.

18. CARDÁMINE L. Sp. Pl. 654. 1753.

Erect or ascending herbs, with scaly or bulbiferous rootstocks or fibrous roots, entire lobed or divided leaves, and racemose or corymbose white or purple flowers. Stamens 6, rarely 4. Siliques elongated, flat, generally erect; valves nerveless or faintly nerved, elastically dehiscent at maturity. Stipe none. Seeds in 1 row in each cell, compressed, marginless; cotyledons accumbent, equal or unequal. [Greek, heart-strengthening, a name for some cress supposed to have that quality.]

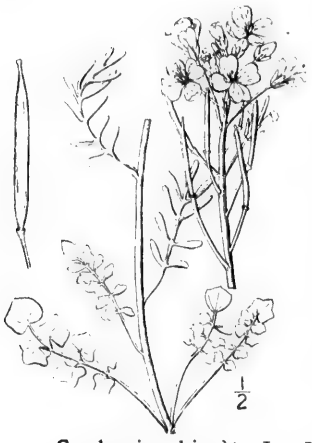
A genus of about 75 species, natives of the temperate regions of both hemispheres.

* **Leaves pinnately divided, or some of them of but a single terminal segment.**

Flowers 6″–9″ broad, white or purplish. 1. *C. pratensis.*
Flowers 1″–4″ broad, white.
Leaf-segments numerous, small, the terminal one 2″–10″ wide, narrowed, rounded or subcordate at the base.
Leaves nearly all basal, pubescent. 2. *C. hirsuta.*
Stem leafy; leaves glabrous or very nearly so.
Mature pods erect, ¼″–½″ wide.
Flowers 2″–2½″ wide; plants of swamps, streams, or wet grounds.
Segments of basal leaves 2″–12″ wide; plant 8′–3° tall. 3. *C. Pennsylvanica.*
Segments of basal leaves ½″–1½″ wide; plant 6′–12′ tall. 4. *C. arenicola.*
Flowers 1″–1½″ wide; plant of dry rocky situations. 5. *C. parviflora.*
Mature pods divergent or ascending, more than ½″ wide. 6. *C. flexuosa.*
Leaf-segments few, large, the terminal one 1′–2′ wide, deeply cordate. 7. *C. Clematitis.*

** **Leaves entire, toothed, or rarely with 1 or 2 lateral segments.**

Dwarf, alpine; leaves nearly entire, long-petioled. 8. *C. bellidifolia.*
Erect or decumbent; leaves more or less toothed or lobed.
Flowers purple; stem erect. 9. *C. Douglassii.*
Flowers white.
Stem erect from a tuberous base. 10. *C. bulbosa.*
Stem decumbent, stoloniferous; roots fibrous. 11. *C. rotundifolia.*



1. **Cardamine praténsis** L. Meadow Bitter-cress. Cuckoo-flower. (Fig. 1724.)

Cardamine pratensis L. Sp. Pl. 656. 1753.

Glabrous, erect or ascending, nearly simple, 8′–20′ high; roots fibrous. Leaves pinnately divided, lanceolate or oblong in outline, the lower petioled, the upper sessile; divisions 3–7 pairs and an odd one, dentate or entire, those of the basal leaves larger and broader than those of the stem; flowers showy, white or purple, 6″–9″ broad; petals three times the length of the calyx; pedicels slender, 4″–6″ long in fruit; pods 8″–15″ long, 1″ wide; style less than 1″ long, thick.

In wet meadows and swamps, Labrador to northern New Jersey, west to the Pacific coast of British America and Minnesota. Also in Europe and northern Asia. April–May. Called also Ladies' Smock.

2. **Cardamine hirsùta** L. Hairy Bitter-cress. (Fig. 1725.)

Cardamine hirsuta L. Sp. Pl. 655. 1753

More or less pubescent, stem erect, usually little branched, slender, 4′–10′ tall. Leaves nearly all basal and forming a rosette, 1′–4′ long, pinnate, the terminal segment orbicular or broader than long, entire or few-toothed, 3″–10″ broad, the lateral ones 2–5 pairs, usually smaller and narrower; stem-leaves few and mostly borne near the base, their segments linear, or linear-oblong; flowers 2″ broad, white; pods linear, about 1′ long and ½″ wide, strictly erect on ascending pedicels 2″–4″ long when mature; style almost none.

In moist places, Pennsylvania to Michigan and North Carolina. Doubtfully native of America. Widely distributed in Europe and Asia. March May.

3. **Cardamine Pennsylvánica** Muhl. Pennsylvania Bitter-cress. (Fig. 1726.)

Cardamine Pennsylvanica Muhl.; Willd. Sp. Pl. 3: 486. 1800.

Cardamine Pennsylvanica Brittoniana Farwell, Asa Gray Bull. 6: 46. 1894.

Glabrous or rarely with a few scattered hairs, stem erect, stout or slender, 8′–3° tall, usually much branched, somewhat succulent, leafy up to the racemes. Basal leaves 2′–6′ long, the terminal segment obovate, oval or suborbicular, usually narrowed at the base, 3″–10″ wide, the lateral 4–8 pairs oblong, oval, or obovate, all toothed, or some of them entire; flowers about 2″ broad, white; pods very narrowly linear, 8″–15″ long, less than ½″ wide, erect when mature on ascending or divergent pedicels 2″–3″ long; style about ½″ long.

In swamps and wet places, Newfoundland to Minnesota, Florida, Tennessee and Missouri. April–June.

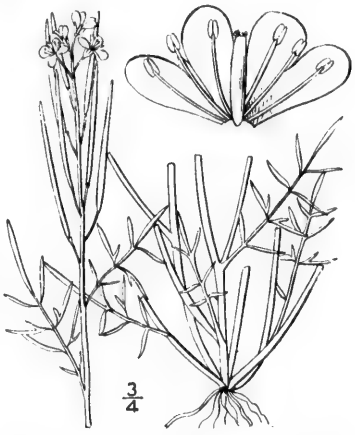
4. Cardamine arenícola Britton. Sand Bitter-cress. (Fig. 1727.)

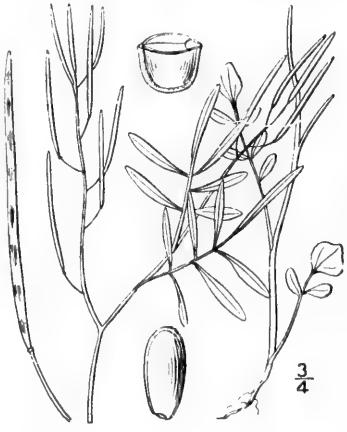
Cardamine Virginica Michx. Fl. Bor. Am. **2**: 29. 1803. Not L. 1753.

Cardamine arenicola Britton, Bull. Torr. Club, **19**: 220. 1892.

Glabrous, usually much branched from the base, leafy nearly or quite up to the racemes, erect, 6′–12′ high. Segments of the leaves numerous, linear or linear-oblong, ½″–1½″ wide, obtusish, entire, or with 1–3 small teeth, those of the basal ones slightly wider than those of the upper; flowers about 2″ broad, white; mature pods strictly erect, less than 1′ long, ¼″–½″ wide, their pedicels ascending; style almost wanting.

In moist or wet sandy soil, Connecticut to Florida, Kentucky and Tennessee. March–April.





5. Cardamine parviflòra L. Small-flowered Bitter-cress. (Fig. 1728.)

Cardamine parviflora L. Sp. Pl. Ed. 2, 914. 1763. *Cardamine hirsuta* var. *sylvatica* A. Gray, Man. Ed. 5, 67. 1867.

Glabrous or very sparingly pubescent, stem weak, erect or ascending, very slender or almost filiform, 2′–15′ long, usually leafy up to the racemes, but the leaves scattered. Segments of the leaves numerous, oblong or linear, or the terminal ones sometimes orbicular, entire or sparingly toothed, ½″–2″ wide; mature pods 1′ long or less, rather less than ½″ wide, erect on ascending pedicels, 2″–5″ long, the axis of the racemes commonly zigzag; flowers scarcely more than 1″ broad, white; style almost wanting.

On dry rocks, Quebec to western Ontario and Oregon, south in the Alleghanies to Georgia. Also in northern Europe and Asia. April–May.

6. Cardamine flexuòsa With. Wood Bitter-cress. (Fig. 1729.)

Cardamine flexuosa With. Bot. Arr. Brit. Pl. Ed. 3, **3**: 578. 1796.

Glabrous, rather dark green, stem slender or rather stout, branched, leafy, 6′–15′ tall. Leaf-segments obovate, oval, oblong or linear, the terminal one sometimes orbicular, narrowed rounded or subcordate at the base, 5″–10″ wide, the lateral ones usually much narrower; flowers white, 2″ broad; pods ascending or divergent, on spreading or ascending pedicels, 8″–15″ long, ½″ wide or rather more; style ¼″ long or less.

In wet woods, streams and mountain swamps, Maine to Michigan, south to North Carolina, especially in the mountains. Also in Europe and Asia, and apparently in Washington. May–Aug.

7. Cardamine Clematitis Shuttlw. Mountain Bitter-cress. (Fig. 1730.)

Cardamine Clematitis Shuttlw.; S. Wats. Bibl. Index, 1: 53. 1878.

Glabrous, dark green, somewhat succulent, stem weak, ascending or erect, slender, 5′–15′ long. Leaves remarkably various, some of them of a single orbicular or reniform, deeply cordate, entire or undulate terminal segment, some of them with two additional ovate oblong or rounded lateral segments, the uppermost occasionally linear-oblong and entire; flowers in short racemes, white, 3″–4″ wide; pedicels ascending, 3″–6″ long; pods ascending or divergent, 1′–1½′ long, less than 1″ wide; style 1″–2″ long, subulate.

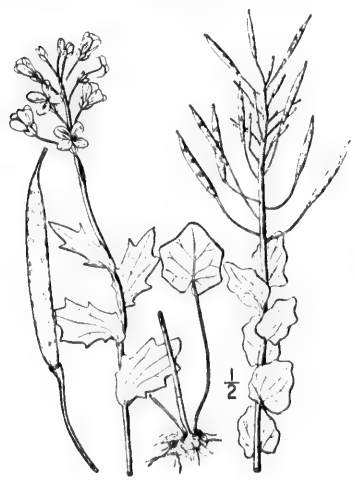
In wet woods, high mountains of southwestern Virginia and North Carolina to Alabama. May–July.

8. Cardamine bellidifòlia L. Alpine Cress. (Fig. 1731.)

Cardamine bellidifolia L. Sp. Pl. 654. 1753.

Tufted, glabrous, 2′–5′ high, with fibrous roots. Lower leaves long-petioled, ovate, obtuse, the blade 4″–6″ long, 3″–4″ broad, abruptly contracted into the petiole, entire, or with a few rounded teeth; upper leaves similar, shorter-petioled; flowers 1–5, white; petals about twice the length of the calyx; pods erect, linear, 1′ long, 1″ wide, narrowed at each end; pedicels 1″–3″ long; style stout, less than 1″ long.

Alpine summits of the White Mountains, N. H.; Mt. Katahdin, Me.; Greenland and arctic America; the Canadian Rocky Mountains; California. Also in Europe. July.



9. Cardamine purpùrea (Torr.) Britton. Purple Cress. (Fig. 1732.)

Arabis rhomboidea var. *purpurea* Torr. Am. Journ. Sci. 4: 66. 1822.
Arabis Douglassii Torr.; T. & G. Fl. N. A. 1: 83. As synonym. 1838.
Cardamine Douglassii Britton, Trans. N. Y. Acad. Sci. 9: 8. 1889.

Glabrous, generally slender, 6′–15′ high from tuberiferous rootstocks. Basal leaves slender-petioled, about 1′ broad, ovate or orbicular, cordate, thickish; lower stem-leaves similar, but shorter-petioled, the upper sessile, dentate or entire; pedicels 4″–12″ long; flowers purple, showy, 5″–10″ broad; pods nearly erect, 1′ long, 1″ broad, pointed at each end; pedicels 4″–12″ long; style 2″ long.

In cold, springy places, Quebec and arctic America to the Canadian Rocky Mountains, south to Maryland and Wisconsin. Blooming two or three weeks earlier than the next, and more abundant northward. April–May.

10. Cardamine bulbòsa (Schreb.) B.S.P. Bulbous Cress. (Fig. 1733.)

Arabis bulbosa Schreb.; Muhl. Trans. Am. Phil. Soc. 3: 174. 1793.
Cardamine rhomboidea DC. Syst. Veg. 2: 246. 1821
Cardamine bulbosa B.S.P. Prel. Cat. N. Y. 4. 1888

Glabrous, erect from a tuberiferous base, simple or sparingly branched above, 6′–1½° high. Basal leaves oval, or nearly orbicular, 1′–1½′ long, sometimes cordate, angled or entire, long-petioled; stem-leaves sessile or the lower petioled, oblong or lanceolate, dentate or entire, 1′–2′ long; pedicels 4″–12″ long; flowers white, 5″–7″ broad; petals three or four times the length of the calyx; pods 1′ long, erect, linear-lanceolate, narrowed at each end; style 1″–2″ long; stigma prominent; seeds short-oval.

In wet meadows and thickets, Nova Scotia to southern Ontario and Minnesota, south to Florida and Texas. Ascends to 2000 ft. in Virginia. April–June.

11. Cardamine rotundifòlia Michx. Round-leaved or American Water-cress. (Fig. 1734.)

Cardamine rotundifolia Michx. Fl. Bor. Am. 2: 30. 1803.

Weak, ascending or decumbent, forming long stolons; roots fibrous. Basal leaves and stem-leaves similar, the lower petioled, the upper sessile, ovate, oval, or orbicular, obtuse, undulate angled or entire, thin, the base rounded, truncate or cordate; pedicels 6″–12″ long in fruit; flowers white, 2″–3″ broad; pods linear, 7″–8″ long, ½″ wide, pointed; pedicels 4″–8″ long; style 1″ long; stigma minute; seeds oblong.

In cold springs, New Jersey to Ohio, south to North Carolina and Kentucky. Ascends to 3500 ft. in Virginia. May–June.

19. DENTÀRIA L. Sp. Pl. 653. 1753.

Perennial herbs, with fleshy horizontal scaly or toothed rootstocks, erect mostly unbranched stems leafless below, 3-divided or palmately laciniate petioled leaves, and corymbose or short-racemose white rose-colored or purple flowers. Petals much longer than the sepals. Stamens 6. Style slender. Silique linear, flat, elastically dehiscent from the base, its valves nerveless or with a faint midnerve; stipe none. Seeds in 1 row in each cell, thick, oval, flattened, wingless; cotyledons thick, nearly or quite equal, accumbent. [Greek, tooth, from the tooth-like divisions of the rootstock.]

About 15 species, natives of the northern hemisphere. Besides the following, some 7 others occur in the western parts of North America. The species are called Pepper-root and Tooth-root, from their pungent and toothed rootstocks.

Basal leaves and stem-leaves similar.
  Leaf-divisions lanceolate or oblong, lobed or cleft. 1. *D. laciniata.*
  Leaf-divisions ovate or ovate-oblong, crenate or lobed.
    Stem-leaves 2, opposite, or close together; rootstock continuous. 2. *D. diphylla.*
    Stem-leaves 2–5, alternate; rootstock jointed. 3. *D. maxima.*
Divisions of the stem-leaves linear or lanceolate; those of the basal leaves ovate, much broader. 4. *D. heterophylla.*

1. Dentaria laciniàta Muhl. Cut-leaved Toothwort or Pepper-root. (Fig. 1735.)

Dentaria laciniata Muhl.; Willd. Sp. Pl. 3: 479. 1800.

Cardamine laciniata Wood, Bot. & Fl. 38. 1870.

Erect, pubescent or glabrous, scapose, simple, 8′–15′ high; rootstock deep, tubercled, jointed. Leaves all petioled, 2′–5′ broad, those of the stem generally 3 and approximate or verticillate, rarely distant, 3-parted nearly to the base; divisions lanceolate, linear or oblong, the lateral ones often deeply 2-cleft, all incisely toothed or lobed; basal leaves similar, rarely developed at flowering time; pedicels ascending, stout, 8″–10″ long in fruit; flowers 7″–9″ broad, white or pink; pods linear, ascending, 1′–1½′ long; style slender, 3″–4″ long.

In moist or rich woods, Quebec to Florida, west to Minnesota and Louisiana. Ascends to 2500 ft. Virginia. April–June.

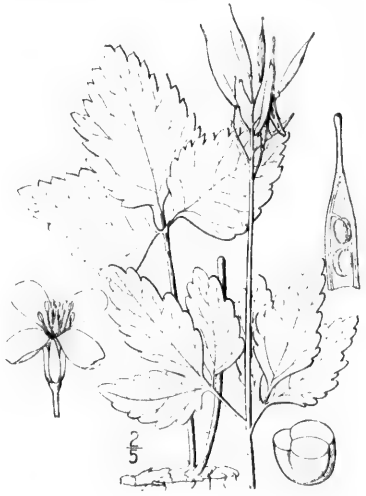
2. Dentaria diphýlla Michx. Two-leaved Toothwort. (Fig. 1736.)

Dentaria diphylla Michx. Fl. Bor. Am. 2: 30. 1803.

Cardamine diphylla Wood, Bot. & Fl. 37. 1870.

Stout, erect, simple, scapose, glabrous, 8′–14′ high; rootstock continuous, toothed. Basal leaves long-petioled, 4′–5′ broad, ternate, the divisions short-stalked, broadly ovate, dentate, or somewhat lobed, about 2′ long; stem-leaves generally 2, opposite or nearly so, similar, shorter petioled and sometimes slightly narrower, ovate or ovate-lanceolate; pedicels 1′–1½′ long; flowers white, 6″–8″ broad; pods 1′ long or more; style slender.

In rich woods and meadows, Nova Scotia and New Brunswick to Lake Superior and Minnesota, south to South Carolina and Kentucky. Also called Crinkle-root. May.



3. Dentaria máxima Nutt. Large Toothwort. (Fig. 1737.)

Dentaria maxima Nutt. Gen. 2: 66. 1818.

Cardamine maxima Wood, Bot. & Fl. 38. 1870.

Similar to the last species but larger; rootstock jointed, prominently tubercled. Stem leaves 2–7 (generally 3), alternate, similar to the basal ones; flowers pale purple, 8″–10″ broad.

Vermont to western New York and Pennsylvania. Local. May.

4. Dentaria heterophýlla Nutt. Slender Toothwort. (Fig. 1738.)

Dentaria heterophylla Nutt. Gen. 2: 66. 1818.

Cardamine heterophylla Wood, Bot. & Fl. 38. 1870.

Erect, simple, slender, scapose, glabrous or somewhat pubescent, 10′–14′ high; rootstock near the surface, jointed. Basal leaves long-petioled, ternate, 2′–3′ broad; divisions short-stalked or sessile, ovate, 1′–1½′ long, the terminal one cuneate or rounded at the base, the lateral ones inequilateral, all crenately toothed, lobed or cleft, the lobes or teeth mucronate; stem-leaves generally 2, opposite or nearly so, petioled, ternate, the divisions linear or lanceolate, 1′–1½′ long, entire or dentate; pedicels 1′ long in fruit; flowers light purple, 8″–9″ broad; pods ascending, linear, narrowed at each end, 1′ long; style slender, 2″–3″ long.

In low woods, New Jersey and Pennsylvania, south along the mountains to Georgia and Tennessee. The stem-leaves often closely resemble those of *D. laciniata*, which blooms a little earlier. April–May.

20. LUNÀRIA L. Sp. Pl. 653. 1753.

Annual, biennial or perennial, more or less pubescent erect branching herbs, with broad simple dentate or denticulate mostly cordate leaves, and large violet flowers in terminal racemes. Lateral sepals saccate at the base. Petals obovate, clawed. Siliques long-stipitate, very flat, oblong or elliptic, the papery valves reticulate-veined, dehiscent. Style filiform; septum hyaline, translucent, shining. Seeds circular or reniform, very large, winged, borne on long funiculi, which are adnate to the septum; cotyledons large, accumbent. [Latin, moon, in allusion to the shining partition of the pod.]

Two known species, natives of Europe and Asia.

Siliques oblong, pointed at both ends; perennial. 1. *L. rediviva.*
Siliques elliptic, rounded at both ends; annual or biennial. 2. *L. annua.*

1. Lunaria rediviva L. Perennial Satin-pod, or Satin-flower. (Fig. 1739.)

Lunaria rediviva L. Sp. Pl. 653. 1753.

Perennial, pubescent with short simple hairs, stem rather stout, 2°–4° tall. Leaves broadly ovate, acuminate at the apex, deeply cordate, or the upper rounded at the base, thin, the lower long-petioled, 3′–6′ long; flowers 8″–12″ broad, slender-pedicelled; pods oblong, 2′–3′ long, drooping, about 1′ wide at the middle, borne on slender stipes of about one-half their length; seeds reniform, broader than long.

In thickets, Canadian side of Niagara Falls. Escaped from gardens or fugitive from Europe. Determination based on flowering specimens collected by Professor Macoun which may, perhaps, belong to the following species. The plant is commonly cultivated for its ornamental flowers and pods. May–July.

2. Lunaria ánnua L. Honesty.
(Fig. 1740.)

Lunaria annua L. Sp. Pl. 653. 1753.

Lunaria biennis Moench, Meth. 126. 1794.

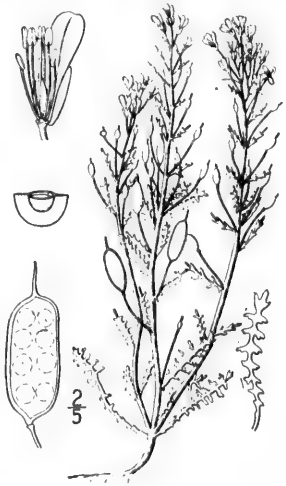
Resembles the preceding species when in flower, but the root is annual or biennial. Siliques elliptic or broadly oval, 1½′–2′ long, 1′ wide or rather more, rounded at both ends; seeds suborbicular, cordate, about as long as wide.

Escaped from gardens to roadsides in southwestern Connecticut. Both this species and the preceding are occasionally cultivated for their remarkably large pods, which are gathered for dry bouquets, the valves falling away at maturity and leaving the septum as a shining membrane. May–June.

21. SELÈNIA Nutt. Journ. Acad. Phila. 5: 132. 1825.

Annual tufted glabrous herbs, with pinnatisect leaves, and racemose leafy-bracted yellow flowers. Sepals spreading. Petals narrow, erect, with 10 hypogynous glands at their bases. Silique stalked, very flat, oblong, narrowed at each end. Valves nerveless, thin, finely veined, dehiscent. Style long, slender. Seeds few, in 2 rows in each cell of the pod, orbicular, flat, broadly winged, free from the septum. Cotyledons accumbent. [Greek, moon, from the resemblance of this genus to *Lunaria*.]

Two or three species, natives of the south-central United States and northern Mexico.



1. Selenia aùrea Nutt. Selenia.
(Fig. 1741.)

Selenia aurea Nutt. Journ. Acad. Phila. 5: 132. 1825.

Stems simple, numerous, 2′–8′ high. Basal leaves 1′–2′ long, narrow, 1–2-pinnatifid into numerous oblong dentate segments; stem-leaves similar, smaller; bracts of the raceme pinnatifid, resembling the upper leaves; flowers 3″–4″ high, numerous; pedicels 5″–7″ long in fruit, spreading or ascending; pod 6″–10″ long, 2″–3″ broad; style 2″ long, very slender.

In open places, Missouri and Kansas to Texas. March–April.

22. LEAVENWÓRTHIA Torr. Ann. Lyc. N. Y. 4: 87. 1837.

Low annual glabrous scapose herbs, with lyrate-pinnatifid persistent basal leaves, and few or solitary terminal flowers. Petals wedge-shaped. Siliques flat, broadly linear or oblong, short-stipitate; valves dehiscent, nerveless, finely reticulate-veined. Seeds in 1 row in each cell of the pod, flat, winged or margined; radicle short, slightly bent toward the cotyledons. [In honor of Dr. M. C. Leavenworth, U. S. A.]

A genus of about 4 species, natives of southeastern North America.

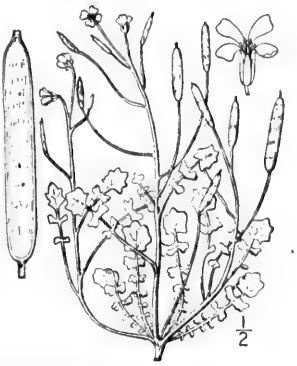
Pods not constricted between the seeds. 1. *L. uniflora.*
Pods constricted between the seeds. 2. *L. torulosa.*

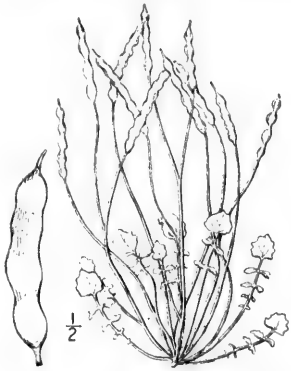
1. Leavenworthia uniflòra (Michx.) Britton. Michaux's Leavenworthia. (Fig. 1742.)

Cardamine uniflora Michx. Fl. Bor. Am. 2: 29. 1803.
Leavenworthia Michauxii Torr. Ann. Lyc. N. Y. 4: 89. 1837.
L. uniflora Britton, Mem. Torr. Club, 5: 171. 1894.

Tufted, 3′–6′ high. Basal leaves rosulate, numerous, 1′–4′ long, the segments 5–17, irregularly dentate or angled, 2″–3″ long, the terminal one somewhat larger, all narrowed near the base, but slightly expanded at the junction with the rachis; stem-leaves none, or 1–3, similar, but smaller; flowers about 3″ broad; petals white or purplish with a yellow base, about twice the length of the sepals; pods oblong or linear, 6″–15″ long, 2″ wide when mature; seeds winged; style stout, about ½″ long.

In open, dry places, southern Indiana to Tennessee, west to Missouri. April.





2. Leavenworthia torulòsa A. Gray. Necklace Leavenworthia. (Fig. 1743.)

Leavenworthia torulosa A. Gray, Bot. Gaz. 5: 26. 1880.

Closely resembles the preceding species, but the pods are narrower and distinctly constricted between the seeds. Style conspicuous, 1½″–2″ long; seeds sharp-margined, barely winged; terminal segment of the basal leaves decidedly broader and larger than the lateral ones.

Barrens of Kentucky and Tennessee. April.

23. PHYSÀRIA A. Gray, Gen. Ill. 1: 162. 1848.

Low perennial stellate-canescent herbs, with erect or ascending usually quite simple stems, spatulate mostly entire leaves, the basal ones tufted, and medium-sized yellow flowers in terminal racemes. Petals longer than the sepals. Style filiform. Silicles membranous, stellate-pubescent, their cells inflated, subglobose, the septum narrow. Seeds not margined; cotyledons accumbent. [Greek, bellows, from the resemblance of the inflated fruit.]

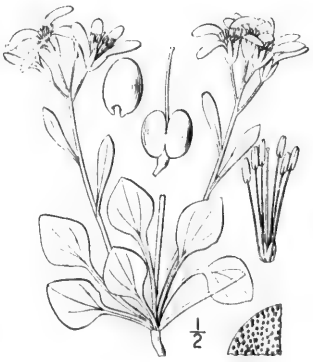
About 4 species, natives of western North America.

1. Physaria didymocàrpa (Hook.) A. Gray. Double Bladder-pod. (Fig. 1744.)

Vesicaria didymocarpa Hook. Fl. Bor. Am. 1: 49. *pl. 16.* 1830.
Physaria didymocarpa A. Gray, Gen. Ill. 1: 162. 1848.

Densely stellate-canescent, pale green; root long and deep. Stems decumbent or ascending, slender, simple, 3′–12′ long; leaves spatulate, the basal ones obtuse, entire, or few-lobed, narrowed into margined petioles; terminal segment large, 1′–5′ long; stem-leaves nearly sessile, acute or subacute, much smaller; racemes 2′–5′ long in fruit; flowers 5″–6″ broad; pods didymous, variable, often 6″ thick through the strongly inflated cavities, emarginate at base and summit, commonly broader than high; seeds numerous.

In dry soil, Northwest Territory to British Columbia, Nebraska, Colorado and Nevada. May–Aug.



24. LESQUERÉLLA S. Wats. Proc. Am. Acad. 23: 249. 1888.

Low annual or perennial herbs, with stellate pubescence, simple leaves, and racemose mainly yellow flowers. Petals entire. Anthers sagittate. Pod generally inflated, globose or oblong; valves nerveless; septum translucent, nerved from the apex to the middle. Seeds several or many in each cell of the pod, flattened, marginless or narrow-margined; cotyledons accumbent [Dedicated to Leo Lesquereux, 1805–1889, Swiss and American botanist.]

A genus of about 35 species, natives of America, and mainly of the western parts of the United States.

Pods densely stellate-pubescent.
- Pods oblong, acute, 2″ long; low perennial. 1. *L. spathulata.*
- Pods globose, 1″ in diameter; tall annual. 2. *L. globosa.*
- Pods oval or subglobose, 2″ long; tall biennial or perennial. 3. *L. argentea.*

Pods glabrous or very nearly so.
- Annual, sparingly pubescent; stem slender, 1°–2° tall, much branched; southwestern 4. *L. gracilis.*
- Perennial, densely stellate; stem rather stout, 6′–12′ tall, simple; western. 5. *L. ovalifolia.*
- Perennial, 1′–6′ tall; stem simple; arctic. 6. *L. arctica.*

1. Lesquerella spathulàta Rydberg. Low Bladder-pod. (Fig. 1745.)

Lesquerella spathulata Rydberg, Contr. U. S. Nat. Herb. 3: 486. 1896.

Perennial, tufted from a deep root, very finely canescent and stellate, 4′–5′ high; stems slender, generally numerous, simple. Lower leaves oblanceolate or spatulate, 6″–12″ long, acutish, narrowed into a petiole; the upper linear, mainly less than 1″ wide; flowers yellow, about 2″ broad; racemes rather few-flowered; pedicels 3″–6″ long, ascending, or recurved in fruit; pods oblong or nearly globose, slightly compressed, acute, subacute or rarely obtuse at each end, finely canescent, about 2″ long, few-seeded, tipped with a style of about their own length; septum commonly unperforated.

Dry hills, Nebraska and South Dakota to Montana and the Northwest Territory. June.

2. Lesquerella globòsa (Desv.) S. Wats. Short's Bladder-pod. (Fig. 1746.)

Vesicaria globosa Desv. Journ. Bot. 3: 184. 1814.
Vesicaria Shortii T. & G. Fl. N. A. 1: 102. 1838.
Lesquerella globosa S. Wats. Proc. Am. Acad. 23: 252. 1888.

Slender, erect or ascending, sparingly branching, 6′–20′ high, finely stellate-pubescent all over. Basal leaves obovate, 1′–1½′ long, obtuse; stem-leaves narrower, linear or oblong, smaller, sessile, entire or with slightly undulate margins, the lowest sometimes narrowed into a petiole; flowers yellow; petals 2″–3″ long; pedicels slender, spreading, 4″–5″ long in fruit; raceme elongating; pod nearly globular, 1″ in diameter, glabrous when mature; seeds 1 or 2 in each cell; style very slender, 2″ long.

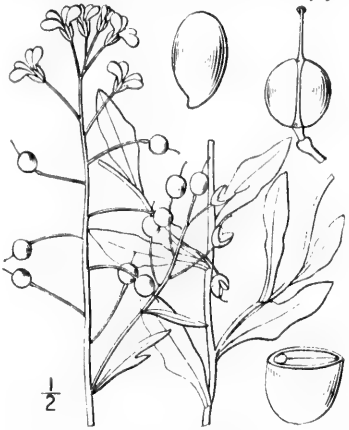
In open places, Kentucky and Tennessee to eastern Missouri. April.

3. Lesquerella argéntea (Pursh) MacM. Silvery Bladder-pod. (Fig. 1747.)

Myagrum argenteum Pursh, Fl. Am. Sept. 434. 1814.
Vesicaria argentea DC. Syst. 2: 297. 1821.
Lesquerella Ludoviciana S. Wats. Proc. Am. Acad. 23: 252. 1888.
Lesquerella argentea MacM. Met. Minn. 263. 1892.

Biennial or perennial, tufted, nearly simple, 6′–18′ high, densely stellate-pubescent throughout. Leaves linear, oblong or oblanceolate, the lower 2′–3′ long, blunt, entire or sparingly repand-toothed; flowers yellow; petals 3″ long; pedicels slender, 8″–12″ long in fruit, spreading or recurved; pod slightly stipitate, stellate-pubescent, globose to oval, 2″–2½″ long; style about equalling the pod.

Prairies, Minnesota, Nebraska and Kansas, west to Dakota and northern Arizona. May–June.



4. Lesquerella grácilis (Hook.) S. Wats. Slender Bladder-pod. (Fig. 1748.)

Vesicaria gracilis Hook. Bot. Mag. *pl. 3533.* 1836.
Lesquerella gracilis S. Wats. Proc. Am. Acad. 23: 253. 1888.

Weak, green, stem slender, 10′–20′ high, freely branching, sparsely stellate-pubescent. Leaves linear or oblanceolate, the lower slightly petioled, the upper sessile, 9″–2′ long, their margins often undulate; flowers yellow; petals about 3″ long; pedicels spreading, sometimes 1′ long in fruit, ascending or upwardly curved; pod globose, glabrous, 2″ in diameter, stipitate at the end of the pedicel; style 2″ long; seeds several in each cell.

Prairies, Nebraska to Texas. March–May.

5. Lesquerella ovalifòlia Rydberg, n. sp. Oval-leaved Bladder-pod. (Fig. 1749.)

Perennial from a tufted caudex, pale, densely stellate-canescent. Basal leaves tufted, broadly oval to obovate, sometimes nearly orbicular, entire, obtuse or subacute, 1′–2′ long, narrowed into rather long petioles; stem-leaves distant, sessile, or the lowest short-petioled, linear-oblanceolate or narrowly spatulate; fruiting pedicels comparatively stout, ascending, 6″–10″ long; pods very short-stipitate, subglobose, obtuse, 2½″–3″ in diameter, glabrous; style about 3″ long; seeds about 6 in each cell.

In dry soil, Kimball Co., Neb. (Rydberg, no. 22, 1891). This has been confounded with

Lesquerella Engelmánni (A. Gray) S. Wats., of Texas and Colorado, said to occur in western Kansas. It differs in the simpler and taller (12′–18′) habit and narrower ovate or oblong leaves.

6. Lesquerella àrctica (DC.) S. Wats. Arctic Bladder-pod. (Fig. 1750.)

Alyssum ? arcticum DC. Syst. 2: 324. 1821.
Vesicaria arctica Richards. Frank. Journ. 743. 1823.
Lesquerella arctica S. Wats. Proc. Am. Acad. 23: 254. 1888.

Perennial, tufted, densely stellate-pubescent, stem nearly or quite simple, erect, 1′–5′ tall. Leaves oblanceolate, or spatulate, or the upper oblong, 1′ long or less, obtuse, entire, the basal ones narrowed into broad petioles, the upper sessile; petals about 2″ long; pods oval or subglobose, obtuse, 2″–3″ high, glabrous or somewhat stellate-pubescent, few-seeded; septum perforated; style 1″ or less long.

Greenland and arctic America. Summer.

Lesquerella àrctica Púrshii S. Wats. Proc. Am. Acad. 23: 254. 1888.

Taller, sometimes 6′ high; septum of the sparsely stellate-pubescent pod unperforated. Anticosti.

25. HUTCHÍNSIA R. Br. in Ait. Hort. Kew. Ed. 2, 4: 52. 1812.

[Hymenolobus Nutt.; T. & G. Fl. N. A. 1: 117. 1838.]

Low mostly diffuse herbs, more or less pubescent with forked hairs, our species annual, with entire or pinnately lobed leaves, and very small white flowers in terminal racemes, the axis of the racemes much elongating in fruit. Stamens 6. Style wanting or very short. Silicles oval, obcompressed (*i. e.*, at right angles to the partition), the valves with a strong midvein. Seeds numerous in each cell; cotyledons incumbent or accumbent. [Name in honor of Miss Hutchins, of Bantry, Ireland, an eminent botanist.]

About 8 species, natives of the northern hemisphere, only the following known in North America.

1. Hutchinsia procúmbens (L.) Desv. Prostrate Hutchinsia. (Fig. 1751.)

Lepidium procumbens L. Spec. Pl. 643. 1753.
Hutchinsia procumbens Desv. Journ. Bot. 3: 168. 1814.
Hymenolobus divaricatus Nutt.; T. & G. Fl. N. A. 1: 117. 1838.
Capsella elliptica C. A. Meyer; Ledeb. Fl. Alt. 3: 199. 1831.

Tufted, somewhat pubescent, or glabrous, branching near the base, the branches ascending or procumbent, slender, 2′–6′ long. Lower leaves short-petioled, pinnatifid, lobed, dentate or sometimes entire, ½′–1′ long; upper leaves sessile or very nearly so, entire or lobed; flowers about ½″ broad; pedicels very slender, ascending or spreading, 3″–6″ long in fruit; pods elliptic or oval, mostly obtuse or emarginate, 1½″–2″ long; seeds several in each cell.

In moist ground, often in saline situations, Labrador to British Columbia, and widely distributed in the Pacific States. Also in Europe, Asia and Australia. June–Aug.

26. BÚRSA Weber in Wigg. Prim. Fl. Holst. 47. 1780.

[Capsella Medic. Pfl. Gatt. 1: 85. 1792.]

Annual erect herbs, pubescent with forked hairs, the basal leaves tufted. Flowers racemose, small, white. Silicles cuneate, obcordate or triangular, compressed at right angles with the septum, their valves boat-shaped, keeled. Style short. Seeds numerous in each cell, marginless; cotyledons accumbent. [Middle Latin, purse, from the shape of the pod.]

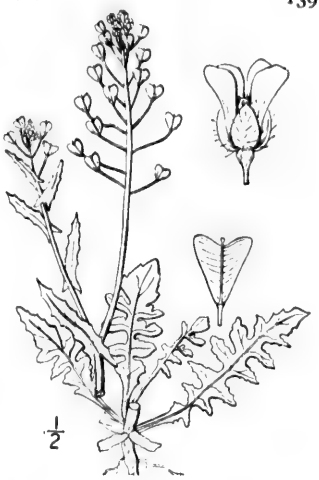
About 4 species, natives of the northern hemisphere. In addition to the following, another occurs in the western parts of North America.

1. **Bursa Bursa-pastòris** (L.) Britton. Shepherd's Purse. (Fig. 1752.)

Thlapsi Bursa-pastoris L. Sp. Pl. 647. 1753.
Bursa pastoris Weber in Wigg. Prim. Fl. Holst. 47. 1780.
Capsella Bursa-pastoris Medic. Pfl. Gatt. 1: 85. 1792.
Bursa Bursa-pastoris Britton, Mem. Torr. Club, 5: 172. 1894.

Erect, branching, 6′–20′ high from a long deep root, pubescent below, mainly glabrous above. Basal leaves more or less lobed or pinnatifid, forming a large rosette, rarely entire, 2′–5′ long; stem-leaves few, lanceolate, auricled dentate or entire; flowers white, about 1″ long; pedicels slender, spreading or ascending, 5″–7″ long in fruit; pods triangular, cuneate at the base, truncate or emarginate at the apex, 2″–4″ long; seeds 10 or 12 in each cell.

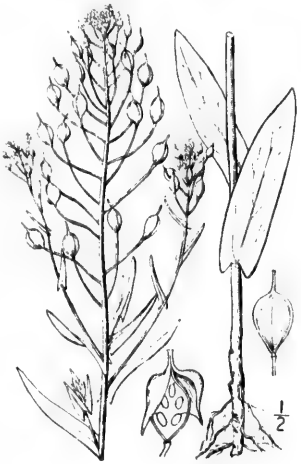
In fields and waste places, very common. Naturalized from Europe, and widely distributed as a weed over all parts of the globe. Jan.–Dec. Other names are St. James'-weed, Case-weed, Mother's-heart.



27. **CAMÉLINA** Crantz, Stirp. Austr. 1: 18. 1762.

Erect annual herbs, with entire toothed or pinnatifid leaves, and small yellowish flowers. Silicles obovoid or pear-shaped, slightly flattened; valves very convex, 1-nerved. Seeds several or numerous in each cell, oblong, marginless, arranged in 2 rows. Stigma entire; style slender. Cotyledons incumbent. [Greek, low flax.]

A genus of about 5 species, natives of Europe and eastern Asia.



1. **Camelina sativa** (L.) Crantz. Gold-of-Pleasure. False Flax. (Fig. 1753.)

Myagrum sativum L. Sp. Pl. 641. 1753.
Camelina sativa Crantz, Stirp. Austr. 1: 18. 1762.

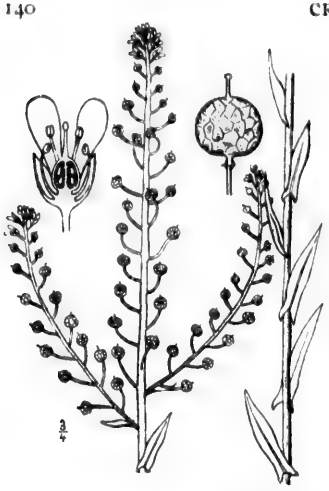
Pilose-pubescent, or glabrous, simple, or branching above, 1°–2° high. Lowest leaves petioled, entire or toothed, 2′–3′ long, lanceolate, acutish; upper leaves sessile, smaller, clasping by a sagittate base, mostly entire; pedicels slender, spreading or ascending, 6″–10″ long in fruit; flowers numerous, about 3″ long; pod obovoid or pyriform, margined, slightly flattened, 3″–4″ long, about 2″–3″ wide; style slender, 1½″ long.

In fields (especially where flax has been grown) and waste places, frequent or occasional throughout our area. Adventive or naturalized from Europe. Old name Myagrum. Cultivated in Europe for the fine oil of its seeds; nutritious to cattle. June–July.

28. **NÉSLIA** Desv. Journ. Bot. 3: 162. 1814.

Annual erect branching herbs, hispid with branched hairs, with entire leaves, and small yellow racemose flowers. Silicles small, globose, wingless, reticulated, indehiscent, 1-celled, 1-seeded or rarely 2-seeded. Style filiform. Seeds horizontal; cotyledons incumbent. [Dedicated to J. A. N. De Nesle, a French botanist.]

A monotypic genus of Europe and eastern Asia.



1. Neslia paniculàta (L.) Desv. Neslia. (Fig. 1754.)

Myagrum paniculatum L. Sp. Pl. 641. 1753.
Neslia paniculata Desv. Journ. Bot. 3: 162. 1814.

Slender, branched above, rather densely rough-hispid, 1°–2° high. Leaves lanceolate, or the upper linear-lanceolate, acute or obtusish at the apex, sagittate-clasping at the base, 1′–2½′ long, 2″–8″ wide; racemes elongated; flowers yellow, nearly 1″ broad; pedicels filiform, ascending, 3″–5″ long in fruit; silicles globose, or slightly depressed, about 1″ in diameter, finely reticulated.

In waste places, Ontario, Manitoba and British Columbia, and in ballast about the eastern seaports. Adventive or fugitive from Europe. May–Sept.

Rapistrum rugòsum (L.) All., a plant with 2-jointed indehiscent pods, erect on appressed pedicels, in long racemes, has been found as a waif at Easton, Penn., and plentifully in ballast about the seaports. It is nearly related to *Raphanus*.

29. DRÀBA L. Sp. Pl. 642. 1753.

Low tufted mostly stellate-pubescent herbs, with scapose or leafy stems, simple leaves, and mainly racemose flowers. Silicles elliptic, oblong or linear, flat, few to many-seeded. Stigma nearly entire. Seeds wingless, arranged in 2 rows in each cell of the pod, numerous; valves dehiscent, nerveless; cotyledons accumbent. [Greek name for some plant of this family.]

Species about 150, mainly natives of the north temperate and arctic regions, a few in southern South America. Besides the following, some 25 others are natives of western North America.

Flowers white.
- Petals deeply 2-cleft. — 1. *D. verna.*
- Petals entire, toothed, or emarginate.
  - Flowering stems scapose, leafy only below.
    - Plants annual, not arctic.
      - Leaves entire, obovate or oblong. — 2. *D. Caroliniana.*
      - Leaves dentate, cuneate. — 3. *D. cuneifolia.*
    - Low arctic perennials.
      - Leaves stellate-canescent. — 4. *D. Fladnizensis.*
      - Leaves pilose-ciliate or glabrous. — 5. *D. nivalis.*
  - Flowering stems leafy throughout up to the inflorescence.
    - Leaves entire or sparingly dentate. — 6. *D. incana.*
    - Leaves sharply dentate. — 7. *D. ramosissima.*

Flowers yellow; stems leafy.
- Pods oblong, 1″–2″ long. — 8. *D. brachycarpa.*
- Pods linear or lanceolate, 3″–6″ long.
  - Annual; pods 3″–4″ long; pedicels divaricately spreading. — 9. *D. nemorosa.*
  - Perennial; pods 4″–7″ long; pedicels erect. — 10. *D. aurea.*

Flowers yellow; stems scapose. — 11. *D. alpina.*

1. Draba vérna L. Vernal Whitlow-grass. (Fig. 1755.)

Draba verna L. Sp. Pl. 642. 1753.
Erophila vulgaris DC. Syst. Veg. 2: 356. 1821.

Annual, the leafless flowering stems (scapes) numerous, 1′–5′ high, erect or ascending, arising from among a tuft of basal leaves, which are oblong or spatulate-oblanceolate, ½′–1′ long, dentate or nearly entire, acutish and pubescent with stiff stellate hairs; scapes nearly glabrous; flowers white, 1½″–2″ broad; petals deeply bifid; pedicels ascending, ½′–1′ long in fruit; racemes elongating; pods oblong, glabrous, 3″–4″ long, 1″ broad, obtuse, shorter than their pedicels; style minute; seeds numerous.

In fields, common throughout our district except the extreme north. Naturalized from Europe. Occurs also in British Columbia. Native of Europe and western Asia. Feb.–May.

2. Draba Caroliniàna Walt. Carolina Whitlow-grass. (Fig. 1756.)

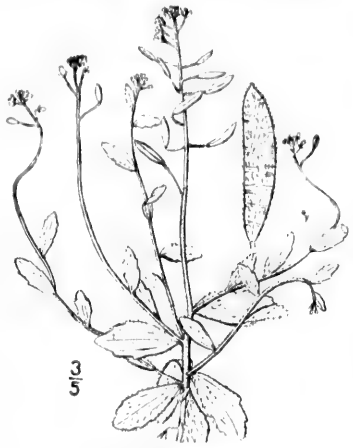
Draba Caroliniana Walt. Fl. Car. 174. 1788.
Draba hispidula Michx. Fl. Bor. Am. 2: 28. 1803.

Annual, the flowering scapes 1′–5′ high from a short leafy stem. Leaves tufted, obovate, 4″–10″ long, obtuse, entire or rarely with 3 or 4 teeth, pubescent with stiff stellate hairs; scapes nearly glabrous; flowers white, 1½″–2″ broad; petals entire, sometimes wanting in the later flowers; pedicels 1″–2″ long in fruit, clustered at the summit of the scape; pods linear, 4″–6″ long, nearly 1″ broad, glabrous; style none.

In sandy fields, eastern Massachusetts to southern Ontario and Minnesota, south to Georgia and Arkansas. March–June.

Draba Caroliniàna micrántha (Nutt.) A. Gray, Man. Ed. 5, 72. 1867.
Draba micrantha Nutt.; T. & G. Fl. N. A. 1: 109. 1838.

Differs from the type only in the appressed-hispid pods. Petals often wanting. Prairies, Illinois to Texas, New Mexico and Washington.



3. Draba cuneifòlia Nutt. Wedge-leaved Whitlow-grass. (Fig. 1757.)

Draba cuneifolia Nutt.; T. & G. Fl. N. A. 1: 108. 1838.

Annual, stellate-pubescent all over, 4′–8′ high, branching and leafy below. Leaves obovate, cuneate, or the lowest spatulate, ½′–1½′ long, obtuse, dentate toward the summit; flowering branches erect or ascending; flowers white, 2″ broad; petals emarginate, twice or thrice the length of the calyx; pedicels ascending or spreading, 2″–4″ long in fruit; raceme elongating; pods linear-oblong, obtuse, 4″–5″ long, 1″ wide, minutely hairy; style none.

In fields, Kentucky to Kansas, south to Florida, west to southern California. Feb.–April.

4. Draba Fladnizénsis Wulf. White Arctic Whitlow-grass. (Fig. 1758.)

Draba Fladnizensis Wulf. in Jacq. Misc. 1: 147. 1778.

Draba androsacea Wahl. Fl. Lapp. 174. 1812.

A low tufted arctic or alpine perennial. Leaves oblanceolate basal, rosulate, acutish, entire, stellate-pubescent or with some simple hairs, ciliate or rarely nearly glabrous, 4″–8″ long; flowers whitish; scapes glabrous; pedicels ascending, 1″–2″ long in fruit; raceme at length somewhat elongated; pods oblong, glabrous, 2″–3″ long, nearly 1″ wide; style almost wanting.

Gaspé, Quebec, and through arctic America, south in the higher Rocky Mountains to Colorado. Also in arctic and alpine Europe and Asia. Summer.

5. Draba nivàlis Lilj. Yellow Arctic Whitlow-grass. (Fig. 1759.)

Draba nivalis Lilj. Vet. Akad. Handl. 1793: 208. 1793.

Perennial by a short branched caudex; scapes tufted, somewhat pubescent, slender, leafless or sometimes bearing a small sessile leaf, 1′–4′ high. Basal leaves usually numerous, tufted, oblanceolate or spatulate, 2″–7″ long, entire, acutish or acute at the apex, narrowed into a short petiole, stellate-canescent, not ciliate, or slightly so near the base; flowers yellow, about 2″ broad; calyx pubescent; style short; pods oblong or linear-oblong, narrowed at both ends, glabrous or but little pubescent, on ascending pedicels 1″–3″ long.

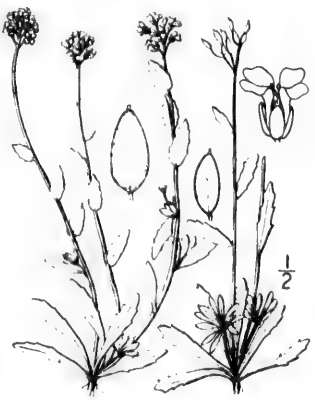
Labrador (according to Robinson), through arctic America to Alaska, south in the Rocky Mountains to Colorado, and in the Sierra Nevada to Nevada. Also in northern Europe and Asia. Summer.

6. Draba incàna L. Hoary or Twisted Whitlow-grass. (Fig. 1760.)

Draba incana L. Sp. Pl. 643. 1753.
Draba confusa Ehrh. Beitr. 7: 155. 1792.

Perennial or biennial, erect, simple or somewhat branched, leafy, stellate-pubescent throughout, 6′–12′ high. Leaves lanceolate, oblanceolate or ovate, 4″–12″ long, acutish or obtuse, dentate or nearly entire; flowers white, 1″–1½″ broad; petals notched, twice as long as the calyx; pods oblong or lanceolate, acute, twisted when ripe, on short nearly erect pedicels, densely pubescent or nearly glabrous; style minute.

In rocky places, Green Mountains; Gaspé, Quebec, arctic America, to British Columbia, south in the Rocky Mountains to Colorado. Also in arctic and alpine Europe and Asia. Called also Hunger-flower. Summer.



Draba incàna arábisans (Michx.) S. Wats. Proc. Am. Acad. 23: 260. 1888.
Draba arabisans Michx. Fl. Bor. Am. 2: 28. 1803.

Stem branched below, bearing tufts of spatulate narrow leaves; pods glabrous, twisted; style ½″ long. Northern New England and New York to Labrador, west along the Great Lakes to Minnesota and Manitoba.

7. Draba ramosíssima Desv. Branching Whitlow-grass. (Fig. 1761.)

Draba ramosissima Desv. Journ. Bot. 3: 186. 1814.

Erect, much branched below, 6′–18′ high, stellate-pubescent throughout, the branches bearing tufts of leaves, the inflorescence corymbosely paniculate. Lower leaves spatulate or oblanceolate, 1′–2′ long, acute, dentate with spreading teeth; upper leaves oblong or ovate, similarly dentate; branches of the panicle erect or ascending; flowers white, 2″–3″ broad; petals entire or erose, twice or thrice the length of the sepals; pedicels spreading or ascending, 3″–4″ long in fruit; pods oblong or lanceolate, hairy, 3″–4″ long, twisted; style slender, 1″–2″ long.

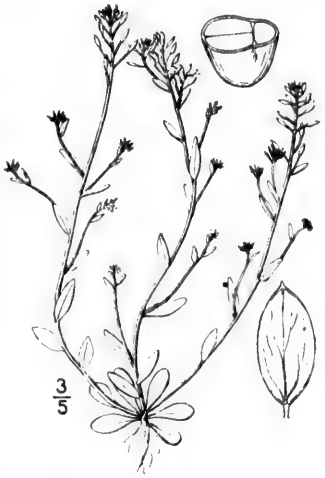
Mountains of Virginia and Kentucky, south to North Carolina and Tennessee. April–May.

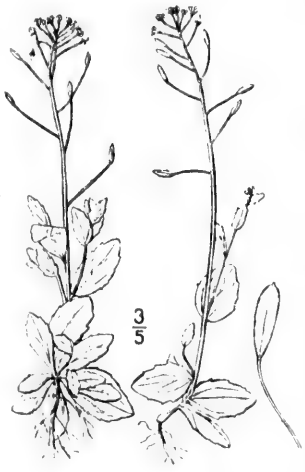
8. Draba brachycàrpa Nutt. Short-fruited Whitlow-grass. (Fig. 1762.)

Draba brachycarpa Nutt.; T. & G. Fl. N. A. 1: 108. 1838.

Annual, tufted, 2′–5′ high, loosely stellate-pubescent, leafy to the inflorescence. Basal leaves ovate or obovate, 4″–6″ long, obtuse, sparingly dentate or entire; stem-leaves smaller, sessile, oblong, entire; pedicels ascending, 1″–2″ long in fruit; raceme elongating; flowers yellow, 1″ broad; petals somewhat longer than the calyx, sometimes wanting; pods oblong, acute, 1½″–2″ long, ½″ broad; style minute.

Dry hills and fields, Virginia to Illinois and Missouri, south to Georgia and Louisiana. March–May.





9. Draba nemoròsa L. Wood Whitlow-grass. (Fig. 1763.)

Draba nemorosa L. Sp. Pl. 643. 1753.

Annual, loosely stellate-pubescent, 6′–12′ high, branching below, leafy to the inflorescence. Leaves oblong-ovate, or lanceolate, obtuse, sessile, dentate, the lower 10″–12″ long, 5″–7″ wide, the upper smaller; flowers yellow, fading to whitish, 1″ broad; petals notched, slightly exceeding the calyx; pedicels divaricately spreading in fruit, glabrous, 3″–10″ long; racemes open, much elongating; pods pubescent, or nearly glabrous, oblong, obtuse, 3″–4″ long; style none.

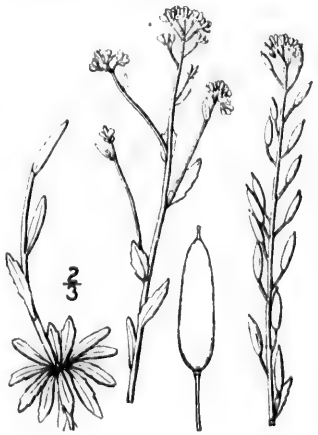
Western Ontario, Michigan and Minnesota to Oregon, arctic America and in the Rocky Mountains. Also in northern Europe and Asia. Summer.

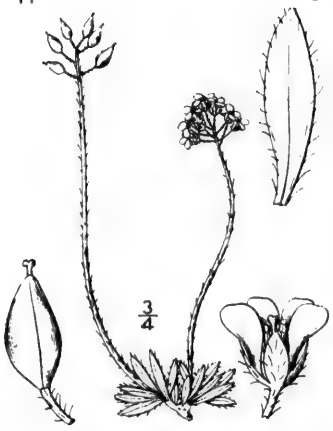
10. Draba àurea Vahl. Golden Whitlow-grass. (Fig. 1764.)

Draba aurea Vahl in Hornem. Fl. OEcon. Ed. 2, 599. 1806.

Perennial, pubescent throughout with stellate and simple hairs; stem branching or nearly simple, 6′–10′ high, leafy to the inflorescence. Basal leaves oblanceolate or spatulate, 6″–12″ long, obtuse or acutish, slightly dentate or entire, often ciliate at the base; stem-leaves oblong or lanceolate, acute; pods lanceolate or oblong-lanceolate, 4″–6″ long; flowers yellow, 2″ broad; petals twice the length of the calyx, emarginate or entire; pods acute, pubescent or rarely glabrous, at length slightly twisted, 4″–7″ long, on erect pedicels one-half their length; style stout, ½″ long.

Mignon Island, Gulf of St. Lawrence to Greenland; arctic America and in the Rocky Mountains south to Arizona. Summer.





11. Draba alpina L. Alpine Whitlow-grass. (Fig. 1765.)

Draba alpina L. Sp. Pl. 642. 1753.

Perennial by a branched caudex, densely tufted, scapes pubescent, ½′–6′ high. Leaves all basal, entire or few-toothed, oblong, or oblong-lanceolate, obtuse or acute at the apex, mostly narrowed at the base, ciliate, or villous-pubescent, sometimes with some stellate hairs, 2″–6″ long, sessile or short-petioled; flowers yellow, about 3″ broad; calyx pubescent or villous; style ½″ long or less; pod oval or ovate, narrowed at both ends, glabrous, or somewhat pubescent, 2½″–4″ long, 1″–1¼″ wide; pedicels ascending, 1″–5″ long.

Hudson Bay to the mountains of British Columbia and Alaska. Also in northern Europe and Asia. Summer.

30. SÒPHIA Adans. Fam. Pl. 2: 417. 1763.

[Descurainia Webb & Barth. Phyt. Can. 1: 72. 1836.]

Annual or perennial herbs (some exotic species shrubby), canescent or pubescent with short forked hairs, with slender branching stems, 2-pinnatifid or finely dissected leaves, and small yellow flowers in terminal racemes, the racemes much elongating in fruit. Calyx early deciduous. Style very short. Siliques linear or linear-oblong, slender-pedicelled, the valves 1-nerved. Seeds very small, oblong, wingless, in 1 or 2 rows in each cell; cotyledons incumbent. [Name in allusion to reputed medicinal properties.]

About 12 species, natives of the north temperate zone, the Canary Islands and the Andes of South America. Besides the following, another occurs in the southwestern United States.

Pods narrowly linear, 8″–12″ long, ½″ wide, curved upward; pedicels ascending. 1. *S. Sophia.*

Pods linear-oblong, 4″–7″ long, nearly or quite 1″ wide, straight or nearly so; pedicels divergent or ascending, mostly longer than the pods.

Densely and finely canescent; pedicels diverging nearly at right angles. 2. *S. pinnata.*

Glabrate or somewhat canescent; pedicels ascending. 3. *S. incisa.*

Pods linear, 4″–5″ long, about ½″ wide; pedicels erect-appressed or narrowly ascending, equalling or shorter than the pods. 4. *S. Hartwegiana.*

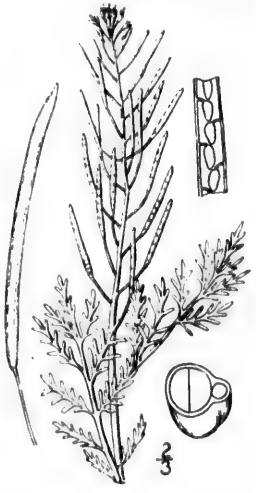
1. Sophia Sòphia (L.) Britton. Flixweed. Herb-Sophia. (Fig. 1766.)

Sisymbrium Sophia L. Sp. Pl. 659. 1753.

Descurainia Sophia Webb; Prantl in Engler & Prantl, Nat. Pfl. Fam. 3: Abt. 2, 192. 1892.

Minutely hoary-canescent, stem usually much branched, 1°–2½° tall, quite bushy. Leaves 2–3-pinnatifid into narrowly linear or linear-oblong segments; flowers very numerous, about 3″ long; pedicels ascending, very slender, 6″–8″ long, glabrous or nearly so; pods narrowly linear, 8″–12″ long, ½″ thick, ascending, curved upwards; seeds in 1 row in each cell of the pod.

In waste places, New Brunswick to Ontario, south to New York and Illinois. Also in ballast about the northern seaports. Naturalized from Europe. Native also of Asia. June–Aug. Called also Fine-leaved Hedge-Mustard.

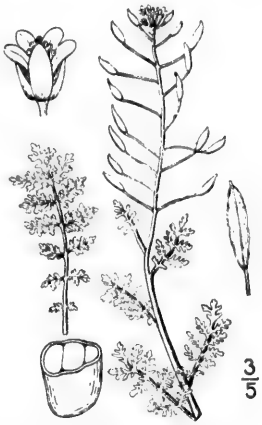


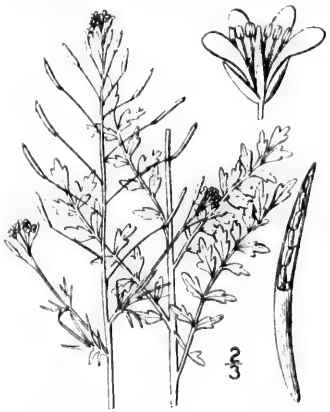
2. Sophia pinnàta (Walt.) Britton. Tansy-Mustard. (Fig. 1767.)

Erysimum pinnatum Walt. Fl. Car. 174. 1788.
Sisymbrium canescens Nutt. Gen. 2: 68. 1818.
Descurainia pinnata Britton, Mem. Torr. Club, 5: 173. 1894.

Densely canescent nearly all over, pale; stem erect, branched, 8′–24′ tall, slender, the branches ascending. Leaves 2′–4′ long, oblong in outline, 2-pinnatifid into very numerous small toothed or entire obtuse segments; pedicels very slender, spreading nearly or quite at right angles to the axis, 5″–7″ long, usually longer than the pods; flowers 1″–1½″ broad; pods horizontal or ascending, oblong or linear-oblong, compressed, 3″–4″ long, 1″ wide, glabrous or somewhat canescent; style minute; seeds plainly in 2 rows in each cell.

In dry soil, Virginia to Florida and Texas. The western plants, commonly referred to this species, are here considered to belong mostly to the next. May–July.





3. Sophia incìsa (Engelm.) Greene. Western Tansy-Mustard. (Fig. 1768.)

Sisymbrium brachycarpon Richards. Frank. Journ. 744. 1823?
Sisymbrium incisum Engelm.; A. Gray, Mem. Am. Acad. 4: 8. 1849.
Descurainia incisa Britton, Mem. Torr. Club, 5: 173. 1894.
Sophia incisa Greene, Pittonia, 3: 95. 1896.

Resembles the preceding species, but is greener, nearly glabrous, or the pubescence is mixed with short glandular hairs. Leaves pinnately divided, and the pinnae 1–2-pinnatifid into linear-oblong entire or toothed segments; fruiting pedicels widely ascending, filiform, 5″–10″ long, usually longer than the pods; pods 4″–7″ long, about 1″ thick, somewhat swollen, erect or ascending; seeds in 1 or 2 rows.

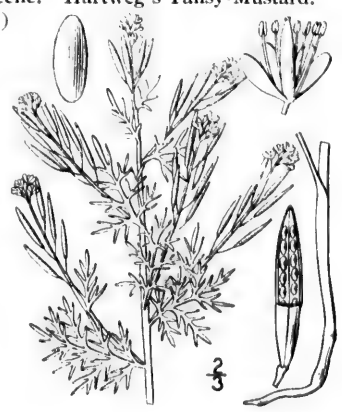
In dry soil, Minnesota to the Northwest Territory and British Columbia, south to Tennessee, Kansas, Texas and California. May–Aug.

4. Sophia Hartwegiàna (Fourn.) Greene. Hartweg's Tansy-Mustard. (Fig. 1769.)

Sisymbrium Hartwegianum Fourn. Sisymb. 66. 1865.
Sisymbrium incisum var. *Hartwegianum* Brew. & Wats. Bot. Cal. 1: 41. 1876.
Descurainia Hartwegiana Britton, Mem. Torr. Club, 5: 173. 1894.
Sophia Hartwegiana Greene, Pittonia, 3: 95. 1896.

Similar to the two preceding species, densely minutely canescent or puberulent, stem 1°–2° tall, the branches slender, ascending. Leaves usually less finely dissected, pinnately divided into 5–7 pinnae, which are pinnatifid with obtuse segments and lobes; fruiting pedicels erect-appressed or closely ascending, 1½″–4″ long, shorter than or equalling the pods; pods erect or nearly so, linear, 4″–5″ long, about ¼″ thick; seeds in 1 row.

In dry soil, Minnesota to the Northwest Territory and Oregon, south to Utah, Mexico and California. The northern plant may be distinct from the plant of Fournier, which was Mexican. May–July.



31. STENOPHRÁGMA Celak. OEster. Bot. Zeitsch. 27: 177. 1877.

Annual or perennial herbs with the aspect of some species of *Arabis*, pubescent with forked hairs, with branched slender erect stems, entire or toothed leaves and small white flowers in terminal racemes. Style very short; stigma 2-lobed. Siliques narrowly linear, the valves rounded, nerveless, dehiscent. Seeds in 1 row in each cell in the following species, in some European species in 2 rows; cotyledons incumbent. [Greek, narrow septum.]

About 10 species, natives of Europe and Asia.

1. Stenophragma Thaliàna (L.) Celak. Mouse ear-, or Thale-cress. Wall-cress. (Fig. 1770.)

Arabis Thaliana L. Sp. Pl. 665. 1753.

Sisymbrium Thalianum Gay, Ann. Sci. Nat. 7: 399. 1826.

Stenophragma Thaliana Celak. OEster. Bot. Zeitsch. 27: 177. 1877.

Stem slender, erect, 1′–16′ high, freely branching, more or less pubescent with short stiff hairs, especially below. Basal leaves 1′–2′ long, obtuse, oblanceolate or oblong, narrowed into a petiole, entire or slightly toothed; stem-leaves smaller, sessile, acute or acutish, often entire; pedicels very slender, spreading or ascending, 2″–4″ long in fruit; flowers white, about 1½″ long; petals about twice the length of the sepals; pods narrowly linear, 4″–10″ long, acute, often curved upward, glabrous.

In sandy fields and rocky places, Massachusetts and southern Ontario to Minnesota, south to Georgia and Missouri. Very common eastward. Naturalized from Europe. Native also of northern Asia. April–May.

32. ÁRABIS L. Sp. Pl. 664. 1753.

[Turritis L. Sp. Pl. 666. 1753.]

Annual or perennial, glabrous or pubescent herbs, with entire lobed or pinnatifid leaves and white or purple flowers. Siliques linear, elongated, flat; valves smooth, keeled or ribbed, mostly 1-nerved, not elastically dehiscent at maturity. Stigma 2-lobed or nearly entire. Seeds in 1 or 2 rows in each cell, flattened, winged, margined or marginless; cotyledons accumbent. [Name from Arabia.]

A genus of about 80 species, mainly natives of the northern hemisphere. In addition to the following, about 26 other species occur in the northern and western parts of the continent. Called also Wall-cress.

Seeds in 1 or 2 incomplete rows in each cavity of the pod.
- Basal leaves pinnatifid; pods ascending.
  - Seeds large, orbicular, wing-margined; stem-leaves pinnatifid. — 1. *A. Virginica.*
  - Seeds minute, oblong, wingless; stem-leaves entire, or dentate. — 2. *A. lyrata.*
- Leaves small, mostly entire; pods drooping; seeds oblong, wingless; arctic. — 3. *A. humifusa.*
- Basal leaves merely dentate or lyrate.
  - Seeds minute, oblong, wingless. — 4. *A. dentata.*
  - Seeds larger, oblong, winged or margined.
    - Pods curved upward, nearly 1″ broad. — 5. *A. alpina.*
    - Pods nearly erect, ½″ broad.
      - Flowers white, 4″ broad; pods not appressed; style ½″ long. — 6. *A. patens.*
      - Flowers white or greenish-white, 2″–3″ broad; pods appressed; style none. — 7. *A. hirsuta.*
    - Pods recurved-spreading.
      - Plant glabrous throughout. — 8. *A. laevigata.*
      - Leaves and lower part of stem hairy. — 9. *A. Canadensis.*

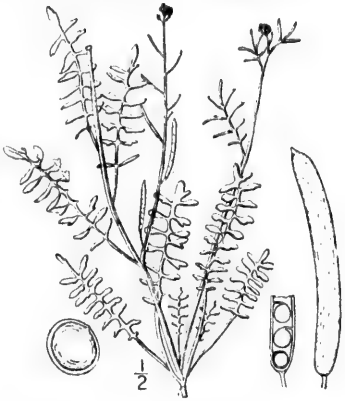
Seeds in 2 distinct rows in each cavity of the pod.
- Pods spreading or ascending; seeds winged. — 10. *A. brachycarpa.*
- Pods erect, appressed; seeds wingless or narrowly winged. — 11. *A. glabra.*
- Pods reflexed; seeds winged. — 12. *A. Holboellii.*

1. Arabis Virgínica (L.) Trelease. Virginia Rock-cress. (Fig. 1771.)

Cardamine Virginica L. Sp. Pl. 656. 1753.
Cardamine Ludoviciana Hook. Journ. Bot. 1: 191. 1834.
Arabis Ludoviciana Meyer, Ind. Sem. Petr. 9: 60. 1842.
Arabis Virginica Trelease; Brauner & Coville, Rep. Geol. Surv. Ark. 1884: Part 4, 165. 1891.

Annual or biennial, diffuse, glabrate, the stems ascending, 6′–12′ high. Leaves oblong, narrow, deeply pinnatifid, 1′–3′ long, the lower petioled, the upper nearly sessile and sometimes reduced to lobed or entire bracts; pedicels spreading or ascending, 2″ long in fruit; flowers very small, white; pods linear, ascending, 8″–12″ long, about 1″ broad; seeds in 1 row in each cell, nearly as broad as the pod, orbicular, wing-margined.

In open places, Virginia and Kentucky to Missouri, south to Florida and Texas, west to Lower California. March–May.



2. Arabis lyràta L. Lyre-leaved Rock-cress. (Fig. 1772.)

Arabis lyrata L. Sp. Pl. 665. 1753.
Cardamine spathulata Michx. Fl. Bor. Am. 2. 29. 1803.

Tufted, perennial or biennial, erect, 4′–12′ high, glabrous above, pubescent below, or sometimes glabrous throughout. Basal leaves lyrate-pinnatifid, 1′–2′ long, spatulate or oblanceolate, pubescent or glabrous; stem-leaves entire or dentate, spatulate or linear, ½′–1′ long; pedicels slender, ascending, 3″–4″ long in flower, elongating in fruit; flowers pure white, 3″–4″ broad; petals much exceeding the calyx; pods 9″–15″ long, linear, ascending, less than 1″ broad, their valves firm, nerved; style ½″ long; seeds in 1 row, oblong, ¼″ long, wingless.

Rocky and sandy places, Ontario to Virginia and Kentucky, west to Manitoba and Missouri. Ascends to 2500 ft. in Virginia. Also in Japan. April–Sept.

Arabis lyràta occidentàlis S. Wats.; Robinson in Gray & Wats. Syn. Fl. 1: Part 1, 159. 1895.

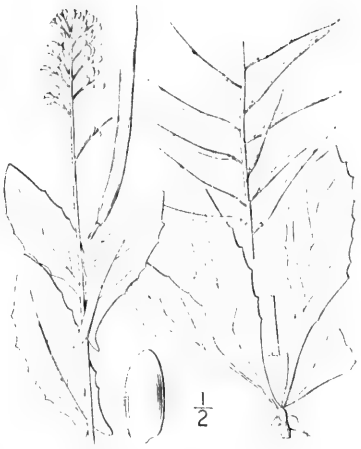
Valves of the pod thin, faintly nerved; stigma sessile or very nearly so. Lake Erie; British Columbia to Alaska.

3. Arabis humifûsa (J. Vahl) S. Wats. Arctic Rock-cress. (Fig. 1773.)

Sisymbrium humifusum J. Vahl, Fl. Dan. *pl. 2297.*
A. humifusa S. Wats. Proc. Am. Acad. 25: 124. 1890.

Perennial from a slender root, somewhat pubescent at least below, or entirely glabrous, the stems diffuse or ascending, slender, mostly simple, 3′–6′ long. Leaves spatulate or oblong, nearly entire, 4″–8″ long, 1″–2″ wide, the lower petioled, the upper sessile; flowers purplish or white, about 3″ broad; style very short; pods linear, flat, at length drooping, 8″–12″ long, rather more than ½″ wide, the valves very faintly nerved; seeds oblong, wingless, in 2 incomplete rows in each cell; cotyledons imperfectly accumbent.

Greenland and Labrador to Hudson Bay and the Northwest Territory. Summer.



5. Arabis alpina L. Alpine Rock-cress. (Fig. 1775.)

Arabis alpina L. Sp. Pl. 664. 1753.

Erect or ascending, 4′–12′ high, densely and finely pubescent. Basal leaves 1′–2′ long, obovate or spatulate, obtuse, dentate, on margined petioles; stem-leaves ovate, sessile, clasping by an auricled base, dentate; flowers white, 2″–3″ broad; petals much exceeding the calyx; pedicels slender, spreading or ascending, 4″ long in fruit; pods 1′–1½′ long, curved upward, narrowly linear, 1″ broad; seeds in 1 row in each cell, oblong, narrowly winged; style scarcely any.

Gaspé, Quebec, to Labrador, arctic America and Alaska. Also in northern and central Europe and in northern Asia. Summer.

4. Arabis dentàta T. & G. Toothed Rock-cress. (Fig. 1774.)

Sisymbrium dentatum Torr. Transyl. Journ. Med. 10: 338. Name only. 1837.

Arabis dentata T. & G. Fl. N. A. 1: 80. 1838.

Slender, erect or ascending, 1°–2° high, sparingly branching, finely rough-pubescent. Basal leaves on margined petioles, obovate, dentate, 2′–4′ long, obtuse; stem-leaves sessile, clasping by an auricled base, dentate, oblong or oblanceolate; pedicels 1″–2″ long, spreading; flowers greenish-white, 1″–2″ broad, the petals hardly exceeding the calyx; pods narrowly linear, 10″–15″ long, spreading; style almost none; seeds in 1 row in each cell, oblong, marginless.

Western New York to Minnesota, south to Tennessee and Missouri. April–June.

6. Arabis pàtens Sulliv. Spreading Rock-cress. (Fig. 1776.)

Arabis patens Sulliv. Am. Journ. Sci. 42: 49. 1842.

Erect, 1°–2° high, mostly pubescent with spreading hairs, at least below. Basal leaves dentate, 1′–3′ long, on margined petioles; stem-leaves 1′–2′ long, ovate or oblong, acute or acutish, sessile, dentate or nearly entire, partly clasping by a cordate base; pedicels ascending, 6″–8″ long in fruit, slender; flowers white, 4″ broad; pods 1′–1½′ long, ½″ broad, narrowly ascending, not appressed; seeds in 1 row in each cell, oblong, narrowly winged; style 1″ long.

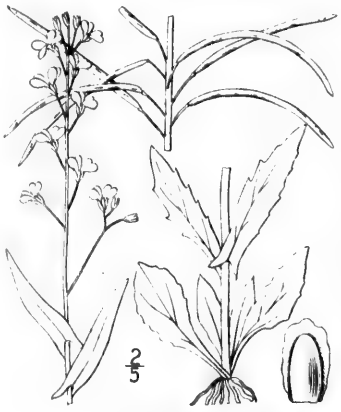
Eastern Pennsylvania to Minnesota, south to Alabama and Missouri. Summer.

7. Arabis hirsùta (L.) Scop. Hairy Rock-cress. (Fig. 1777.)

Turritis hirsuta L. Sp. Pl. 666. 1753.
Arabis hirsuta Scop. Fl. Carn. Ed. 2, 2: 30. 1772.

Stem strictly erect, nearly simple, 1°–2° high, rough-hairy or nearly glabrous. Basal leaves on margined petioles, obovate or spatulate, obtuse, dentate or repand, 1′–2′ long; stem-leaves sessile, clasping by an auricled base, lanceolate or oblong; pedicels nearly erect, or appressed, 3″–6″ long in fruit; flowers 2″–3″ long, white or greenish-white; petals more or less longer than the calyx; pods narrowly linear, erect or appressed, 1′–2′ long, about ½″ wide; seeds 1-rowed, or when young obscurely 2-rowed, oblong or nearly orbicular, narrowly margined; style very short.

In rocky places, New Brunswick to British Columbia, south to the mountains of Georgia, Arizona and California. Also in Europe and Asia. May–Sept.



8. Arabis laevigàta (Muhl.) Poir. Smooth Rock-cress. (Fig. 1778.)

Turritis laevigata Muhl.; Willd. Sp. Pl. 3: 543. 1801.
A. laevigata Poir. in Lam. Encycl. Suppl. 1: 411. 1810.

Glaucous, entirely glabrous, 1°–3° high, nearly simple. Basal leaves petioled, spatulate or obovate, sharply and deeply dentate, 2′–3′ long; stem-leaves sessile, lanceolate, or the upper linear, acute, entire or dentate, clasping by an auricled or sagittate base; pedicels ascending or spreading, 4″–5″ long in fruit; flowers greenish white, 2″–3″ high; petals nearly twice the length of the calyx; pods 3′–4′ long, 1″ wide, recurved-spreading; seeds in 1 row, oblong, broadly winged; style almost none.

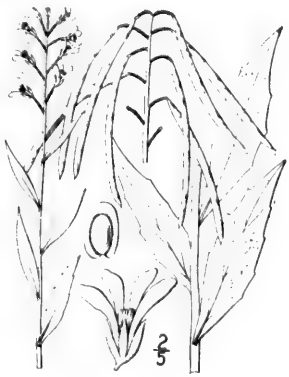
In rocky woods, Quebec to Lake Huron and Minnesota, south to Georgia and Arkansas. Ascends to 5000 ft. in Virginia. April–May.

Arabis laevigàta laciniàta T. & G. Fl. N. A. 1: 82. 1838.
Stem-leaves deeply and narrowly laciniate-toothed. Kentucky.

Arabis laevigàta Búrkii Porter, Bull. Torr. Club, 17: 15. 1890.
Leaves linear or lanceolate, elongated, entire or sparingly toothed, not auricled at the base; flowers one-half the size of the type; petals equalling the sepals. Pennsylvania to North Carolina.

9. Arabis Canadénsis L. Sickle-pod. (Fig. 1779.)

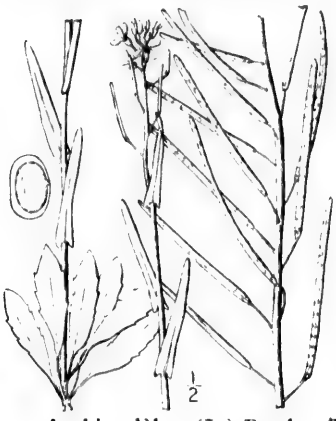
Arabis Canadensis L. Sp. Pl. 665. 1753.



Stem nearly simple, 1°–3° high, pubescent below, glabrous above. Basal leaves narrowed into a petiole, blunt but sometimes acutish, dentate or lyrately lobed, 3′–7′ long; stem-leaves sessile, not clasping, lanceolate or oblong, narrowed at each end, toothed, or the upper entire, pubescent; pedicels hairy, ascending and 2″–4″ long in flower, spreading or recurved and 4″–6″ long in fruit; flowers greenish-white, 2″–3″ long; petals twice as long as the calyx; pods 2′–3½′ long, 1½″ broad, scythe-shaped, pendulous; seeds in 1 row in each cell, oblong, wing-margined; style almost none.

In woods, Ontario to Georgia, west to Minnesota, Arkansas and Texas. Ascends to 4200 ft. in North Carolina. June–Aug.

10. Arabis brachycàrpa (T. & G.) Britton. Purple Rock-cress. (Fig. 1780.)



Turritis brachycarpa T. & G. Fl. N. A. **1**: 79. 1838.
Arabis confinis S. Wats. Proc. Am. Acad. **22**: 466. 1887.
A. brachycarpa Britton, Mem. Torr. Club, **5**: 174. 1894.

Biennial, somewhat glaucous, generally purplish, glabrous except at the base, simple or sparingly branched, 1°–3° high. Basal leaves stellate-pubescent, obovate or spatulate, 1′–3′ long, dentate, narrowed into a petiole; stem leaves sessile, auricled at the base, lanceolate or oblong-linear, about 1′ long, entire or with a few teeth; pedicels erect or spreading, 3″–5″ long in fruit; flowers white or pink, 4″ broad; petals twice the length of the calyx; pods narrowly linear, nearly straight, 1′–3′ long, 1″ wide, loosely erect or ascending; seeds in 2 rows in each cavity, oblong, wing-margined.

Quebec to Manitoba and the Northwest Territory, south to Massachusetts, western New York, Illinois and Minnesota. June–July.

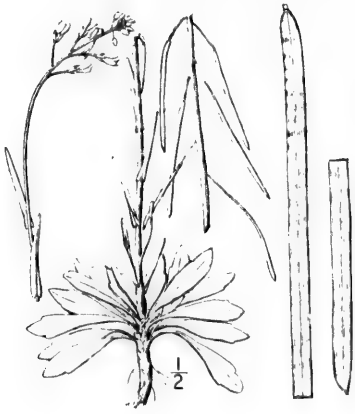
11. Arabis glàbra (L.) Bernh. Tower Mustard. (Fig. 1781.)

Turritis glabra L. Sp. Pl. 666. 1753.
Arabis glabra Bernh. Verz. Syst. Erf. 195. 1800.
Arabis perfoliata Lam. Encycl. **1**: 219. 1783.

Biennial, erect, glabrous and decidedly glaucous above, pubescent at the base, nearly simple, 2°–4° high. Basal leaves petioled, 2′–10′ long, oblanceolate or oblong, dentate or sometimes lyrate, hairy with simple pubescence, or with hairs attached by the middle; stem-leaves sessile, with a sagittate base, glabrous, entire or the lower sparingly dentate, 2′–6′ long, lanceolate or oblong, acutish; pedicels 2″–6″ long, erect; flowers yellowish-white, 2″ broad; petals slightly exceeding the calyx; pods narrowly linear, 2′–3′ long, ½″ wide, strictly erect and appressed; seeds in 2 rows, marginless, or narrowly winged; style none.

In fields and rocky places, Quebec to southern New York and Pennsylvania, west to the Pacific Coast. Appears in some places as if not indigenous. Also in Europe and Asia. May–Aug.

12. Arabis Holboèllii Hornem. Holboell's Rock-cress. (Fig. 1782.)



A. Holboellii Hornem. Fl. Dan. **11**: *pl. 1879*. 1827.
Arabis retrofracta Graham, Edinb. Phil. Journ. 1829, 344. 1829.

Erect, simple or branching above, 10′–24′ high, stellate-pubescent, hirsute or even nearly glabrous. Lower leaves spatulate or oblanceolate, tufted, petioled, ½′–2′ long, obtuse, entire or sparingly toothed; stem-leaves sessile, erect, clasping by a narrow auricled base; pedicels slender, reflexed or the upper ascending, 3″–5″ long in fruit; flowers purple or whitish, 3″–4″ long, becoming pendent; petals twice the length of the calyx; pods linear, 1′–2′ long, slightly more than ½″ wide, drooping; seeds margined, indistinctly in 2 rows in each cell; style very short or none.

Lake Nepigon (according to Macoun) and throughout arctic America, extending south in the Rocky Mountains and the Sierra Nevada to New Mexico and California. Summer.

33. ERÝSIMUM L. Sp. Pl. 660. 1753.

Annual or biennial, mainly erect and branching herbs, more or less pubescent or hoary, with simple entire toothed or lobed leaves. Flowers mostly yellow. Siliques elongated, linear, 4-angled or rarely terete; valves strongly keeled by a prominent midvein. Stigma lobed. Seeds oblong, in 1 row in each cell, marginless or narrowly margined at the top; cotyledons incumbent. [Greek, name of a garden plant, meaning, perhaps, blister-drawing.]

A genus of about 85 species, natives of the north temperate zone, most abundant in eastern Europe and central Asia. In addition to the following, 2 others are found in the Rocky Mountains and one on the Californian coast.

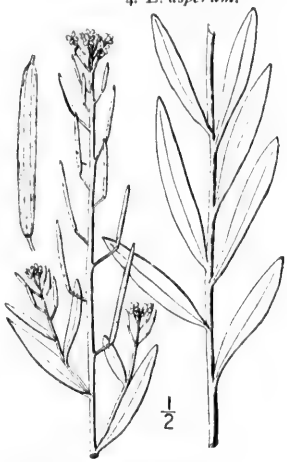
Flowers 2″–4″ high.
Pedicels slender, spreading; pods very narrow, 6″–12″ long. 1. *E. cheiranthoides.*
Pedicels stout, short; pods 9″–2′ long.
Pods 1′–2′ long, less than 1″ thick; plant green, appressed-pubescent. 2. *E. inconspicuum.*
Pods 9″–18″ long, about 1″ thick; plant pale, appressed-canescent. 3. *E. syrticolum.*
Flowers 8″–12″ high, conspicuous. 4. *E. asperum.*

1. Erysimum cheiranthoides L. Wormseed or Treacle Mustard. (Fig. 1783.)

Erysimum cheiranthoides L. Sp. Pl. 661. 1753.

Erect, minutely rough-pubescent, branching, 8′–2° high. Leaves lanceolate or oblong-lanceolate, 1′–4′ long, acutish or obtuse, entire or slightly dentate, tapering at the base into a short petiole or the upper sessile; pedicels slender, spreading or somewhat ascending, 3″–4″ long in fruit; flowers about 2½″ high; pods linear, obtusely 4-angled, glabrous, 6″–12″ long, less than 1″ broad, nearly erect on slender spreading pedicels; valves strongly keeled; style ½″ long.

Along streams and in fields, New Jersey, Pennsylvania and southern New England to Newfoundland, west to the Pacific Coast. Appears in some places as adventive. Also in northern Europe. June–Aug.



2. Erysimum inconspicuum (S. Wats.) MacM. Small Erysimum. (Fig. 1784.)

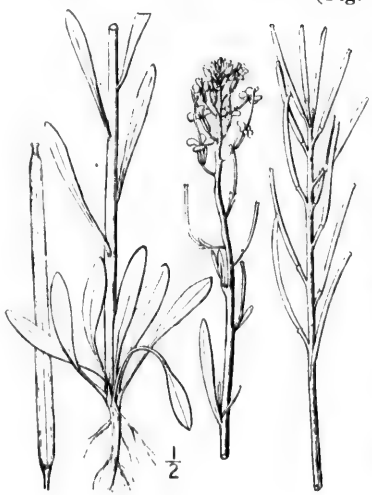
Erysimum parviflorum Nutt.; T. & G. Fl. N. A. 1: 95. 1838. Not Pers.

Erysimum asperum var. *inconspicuum* S. Wats. Bot. King's Exp. 24. 1871.

Erysimum inconspicuum MacM. Met. Minn. 268. 1892.

Erect, green, roughish-puberulent, stem 1°–2° tall, simple or sparingly branched. Leaves oblanceolate or linear, 1′–3′ long, obtuse, entire or dentate, the upper sessile, the lower slender-petioled; flowers about 4″ high and broad; pedicels stout, about 2″ long in fruit, ascending; pods narrowly linear, 1′–2′ long, less than 1″ wide, minutely rough-puberulent, narrowly ascending or erect; style very stout, ½″–1″ long.

In dry soil, Minnesota to Manitoba, British Columbia and Alaska, south to Kansas, Colorado and Nevada. Also in Ontario, according to Macoun. July–Aug.

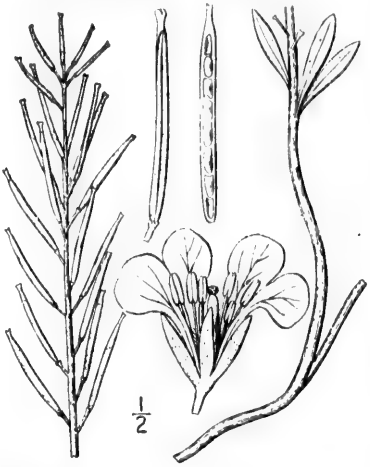


3. **Erysimum syrticolum** Sheldon. Sand Erysimum. (Fig. 1785.)

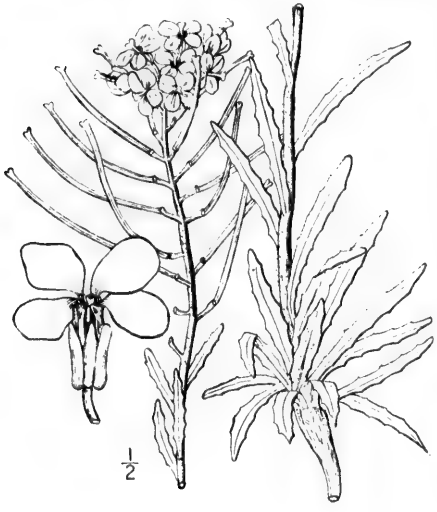
Erysimum syrticolum Sheldon, Bull. Torr. Club, **20**: 285. 1893.

Similar to the preceding species and perhaps a form of it, but pale and finely appressed-canescent, the stems stiff, erect or assurgent, branched near the base or simple, 1°–2½° tall. Leaves firm, linear-lanceolate, entire or sparingly denticulate, 1′–2′ long, early falling away; flowers 3″–4″ high; stigma conspicuously 2-lobed; style less than 1″ long; pods linear, rather stout, 9″–18″ long, nearly 1″ thick, erect or nearly so on ascending pedicels 2½″–4″ long; seeds oblong, ½″ long.

On dry sandy banks, Minnesota to the Northwest Territory. July–Aug.



4. **Erysimum asperum** DC. Western Wall-flower. Yellow Phlox. (Fig. 1786.)



Erysimum lanceolatum Pursh, Fl. Am. Sept. 436. 1814. Not R. Br. 1812.

Erysimum asperum DC. Syst. **2**: 505. 1821.

Erysimum Arkansanum Nutt.; T. & G. Fl. N. A. **1**: 95. 1838.

Rough-pubescent or hoary, 1°–3° high, simple or branching above. Lower leaves lanceolate or linear, tapering into a petiole, dentate or sometimes entire, mainly acute; upper leaves smaller, sessile or nearly so, entire or rarely toothed; flowers orange-yellow, large and showy, 6″–12″ high and nearly as broad; pedicels stout, spreading, 2″–3″ long in fruit; pods linear, rough, 1½′–4′ long, nearly 1″ wide, 4-sided; style short, thick.

In open places, Ohio and Illinois to Texas and the Saskatchewan region, west to the Pacific Coast. The eastern plant (*E. Arkansanum* Nutt.) generally has broader leaves than the western. Also in eastern Quebec, probably adventive. May–July.

34. ALÝSSUM L. Sp. Pl. 650. 1753.

Low branching stellate-pubescent annual or perennial herbs, with small racemose yellow or yellowish flowers. Petals entire. Filaments often dilated and toothed or appendaged. Silicle ovate, oblong or orbicular, compressed, its valves nerveless, the septum thin. Stigma nearly entire. Seeds 1–8 in each cell of the pod, wingless; cotyledons accumbent. [Greek, curing madness.]

A genus of about 100 species, natives of the Old World, some of them known as Madwort.

1. **Alyssum alyssoides** (L.) Gouan. Yellow or Small Alyssum. (Fig. 1787.)

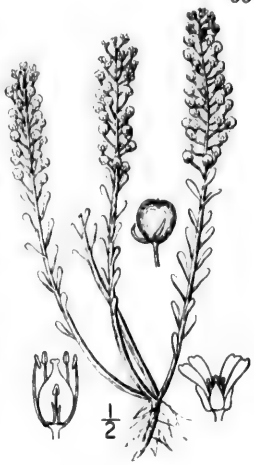
Clypeola alyssoides L. Sp. Pl. 652. 1753.

Alyssum alyssoides Gouan, Hort. Monsp. 321. 1762.

Alyssum calycinum L. Sp. Pl. Ed. 2, 908. 1763.

Densely stellate-pubescent, erect, simple, or branching from the base, tufted, 3′–10′ high. Leaves linear-oblong or spatulate, narrowed at the base, obtuse, entire, 3″–15″ long, the lower somewhat petioled; flowers yellowish-white, 1″ broad; pedicels spreading or ascending, 2″ long in fruit; pods orbicular, 1½″ in diameter, margined, minutely pubescent, notched at the apex, tipped with the minute style; sepals persisting around the base of the pod; seeds 2 in each cell; filaments of the shorter stamens minutely toothed at the base.

In fields, Ontario to southeastern New York, New Jersey and Iowa, and in ballast about the seaports. Also in the Far West. Naturalized or adventive from Europe. Summer.



35. KÒNIGA* Adans. Fam. Pl. 2: 420. 1763.

[LOBULARIA Desv. Journ. Bot. 3: 172. 1813.]

Perennial herbs or shrubs, pubescent or canescent with forked hairs, with entire leaves and small white flowers in terminal racemes. Petals obovate, entire. Filaments slender, not toothed, but with two small glands at the base. Silicle compressed, oval or orbicular. Seeds 1 in each cell. Cotyledons accumbent. [Name in honor of Charles Konig, a curator of the British Museum.]

About 4 species, natives of the Mediterranean region.

1. **Koniga maritima** (L.) R. Br. Sweet Alyssum. Seaside Koniga. (Fig. 1788.)

Clypeola maritima L. Sp. Pl. 652. 1753.
Alyssum maritimum Lam. Encycl. 1: 98. 1783.
Koniga maritima R. Br. in Denh. & Clapp, Narr. Exp. Afric. 213. 1826.

Procumbent or ascending, freely branching, 4′–12′ high, minutely pubescent with appressed hairs. Stem-leaves nearly sessile, lanceolate or linear, ½′–2′ long, 1″–2½″ wide; basal leaves oblanceolate, narrowed into a petiole; flowers white, fragrant, about 2″ broad; pedicels ascending, 3″–4″ long in fruit; pods glabrous, pointed, oval or nearly orbicular, 1″–1½″ long; calyx deciduous; stamens not appendaged.

In waste places, occasional. Escaped from gardens. Adventive from Europe. Summer.

36. BERTERÒA DC. Mem. Mus. Paris, 7: 232. 1821.

Annual or perennial herbs, pubescent or canescent with forked hairs, the leaves mostly narrow and entire, and the flowers white or yellow in terminal racemes. Petals 2-cleft. Filaments 2-toothed at the base. Silicles oblong or subglobose, little compressed. Seeds several in each cell; cotyledons accumbent. [In honor of C. G. Bertero, a botanist of Piedmont, 1739–1831.]

About 5 species, natives of Europe and Asia.

*Originally spelled *Konig*. Latinized by R. Brown in 1826.

1. **Berteroa incàna** (L.) DC. Hoary Alyssum. (Fig. 1789.)

Alyssum incanum L. Sp. Pl. 650. 1753.

Berteroa incana DC. Syst. 2: 291. 1821.

Erect or ascending, 1°–2° high, hoary-pubescent, branching above. Leaves lanceolate or oblong, ½′–1½′ long, obtuse, entire or slightly undulate, the lower narrowed into a petiole; flowers white, 1″–1½″ broad; pedicels ascending, 2″–3″ long in fruit; pod pubescent, oblong, 3″–4″ long and about half as broad; cells several-seeded; style 1″–1½″ long; stigma minute.

In waste places, Maine to Massachusetts, New Jersey and Missouri. Adventive or naturalized from Europe, becoming abundant. Racemes elongating, the flowers and pods very numerous. June–Sept.

37. **HÉSPERIS** L. Sp. Pl. 663. 1753.

Erect perennial or biennial herbs, pubescent with forked hairs, with simple leaves and large racemose purple or white flowers. Stigma with 2 erect lobes. Siliques elongated, nearly cylindric, the valves keeled, dehiscent, 1-nerved. Seeds in 1 row in each cell, globose, wingless; cotyledons incumbent. [Name from *Hesperus*, evening, when the flowers are most fragrant.]

About 20 species, natives of Europe and Asia.

1. **Hesperis matronàlis** L. Dame's Rocket or Dame's Violet. (Fig. 1790.)

Hesperis matronalis L. Sp. Pl. 663. 1753.

Erect, simple or sparingly branched above, 2°–3° high, pubescent. Lower leaves 3′–8′ long, tapering into a petiole, ovate or ovate-lanceolate, acute, dentate with minute teeth, pubescent on both sides; upper leaves similar but smaller, sessile or short-petioled; flowers 8″–12″ broad, pink, purple or white, fragrant; blade of the petals widely spreading, about as long as the claw; pods 2′–4′ long, spreading or ascending, contracted between the seeds when ripe.

In fields and along roadsides, escaped from gardens, Massachusetts to Pennsylvania and Iowa. Native of Europe and Asia. May–Aug. Old English names are Queen's or Dame's Gilliflower; Night-scented, Rogue's or Winter Gilliflower; Damask Violet.

Family 33. **CAPPARIDÀCEAE** Lindl. Nat. Syst. Ed. 2, 61. 1836.

Caper Family.

Herbs or shrubs (rarely trees), with a watery sap, alternate or very rarely opposite, simple or palmately compound leaves and axillary or terminal, solitary or racemose, regular or irregular, mostly perfect flowers. Sepals 4–8. Petals 4 (rarely none), sessile or clawed. Receptacle elongated or short. Stamens 6–∞, not tetradynamous, inserted on the receptacle; anthers oblong. Ovary sessile or stipitate; style generally short; ovules ∞, borne on parietal placentae. Fruit a capsule or berry. Seeds mainly reniform in our species; endosperm none; embryo generally coiled.

A family of about 35 genera and 400 species, mostly of warm regions.

Pod long-stipitate on its pedicel; stamens 4–6.
Pod linear-elongated; petals generally clawed.
Petals entire. 1. *Cleome.*
Petals laciniate. 2. *Cristatella.*
Pod short, rhomboid; petals sessile. 3. *Cleomella.*
Pod nearly or quite sessile on its pedicel. 4. *Polanisia.*

1. CLEÒME L. Sp. Pl. 671. 1753.

Herbs or low shrubs, generally branching. Leaves digitately 3–5-foliolate, or simple. Leaflets entire or serrulate. Calyx 4-divided or of 4 sepals, often persistent. Petals 4, cruciate, nearly equal, entire, more or less clawed. Receptacle short, slightly prolonged above the petal-bases. Stamens 6 (rarely 4), inserted on the receptacle above the petals. Ovary stalked, with a gland at its base. Capsule elongated, long-stipitate, many-seeded. [Derivation uncertain; perhaps from the Greek, to shut.]

About 75 species, mainly natives of tropical regions, especially American and African. In addition to the following, 4 others occur in the western part of the United States.

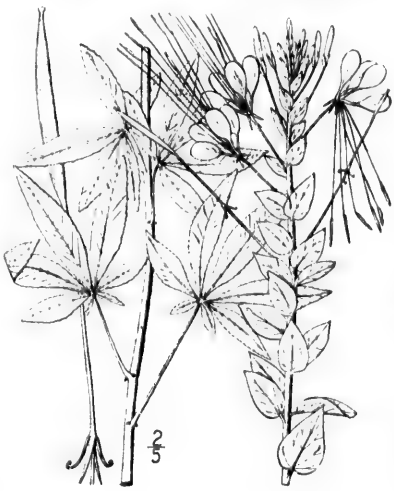
Leaves 3-foliolate; flowers pink, or white. 1. *C. serrulata.*
Leaves, at least the lower, 5–7-foliolate.
Flowers pink, or white. 2. *C. spinosa.*
Flowers yellow. 3. *C. lutea.*

1. Cleome serrulàta Pursh. Pink Cleome. (Fig. 1791.)

Cleome serrulata Pursh, Fl. Am. Sept. 441. 1814.
Cleome integrifolia T. & G. Fl. N. A. 1: 122. 1838.

Erect, glabrous, 2°–3° high, branching above. Leaves 3-foliolate, the lower long and slender-petioled, the upper sessile or nearly so; leaflets lanceolate or oblong, acute, entire or distantly serrulate, 1′–3′ long, fruiting racemes greatly elongated; bracts lanceolate or linear, often mucronate; pedicels slender, spreading or recurved and 6″–10″ long in fruit; stipe of the pod about equalling the pedicel; flowers pink or white, very showy; petals oblong, slightly clawed, 5″–6″ long, obtuse; pods linear, acute, 1′–2′ long.

Prairies, northern Illinois to Minnesota and the Canadian Rocky Mountains, southwest to Kansas, New Mexico and Arizona. Naturalized from the west, in its eastern range. July–Sept.



2. Cleome spinòsa L. Spider-flower. (Fig. 1792.)

Cleome spinosa L. Sp. Pl. Ed. 2, 939. 1763.
Cleome pungens Willd. Enum. Pl. 689. 1809.

Erect, 2°–4° high, branching above, clammy-pubescent. Leaves 5–7-foliolate, the lower long-petioled, 5′–8′ in diameter, the upper shorter-petioled or nearly sessile, passing into the simple lanceolate or cordate-ovate bracts of the raceme; petioles spiny at the base; leaflets lanceolate or oblong-lanceolate, acute, minutely serrulate; flowers numerous, long-pedicelled, showy, purple or whitish, 1′ broad or more; petals obovate, long-clawed; stipe of the linear glabrous pod at length 2′–6′ long; stamens variable in length, often long-exserted.

In waste places, southern New Jersey to Florida, west to Illinois and Louisiana. Sometimes cultivated for ornament. Fugitive or adventive from tropical America. Summer.

3. Cleome lùtea Hook. Yellow Cleome. (Fig. 1793.)

Cleome lutea Hook. Fl. Bor. Am. 1: 70. *pl. 25.* 1830.

Erect, glabrous, branching, 1½°–3½° high. Leaves 5-foliolate, slender-petioled, or the upper 3-foliolate and nearly sessile; leaflets oblong or oblong-lanceolate, entire, short-stalked or sessile, narrowed at the base, obtuse or acute and mucronulate at the apex, ½′–2′ long; racemes elongating in fruit; bracts linear-oblong, mucronate; pedicels slender, 5″–6″ long; flowers densely racemose, yellow; petals obovate or oblanceolate, about 5″ long; pod linear, 1½′–3′ long, acute, borne on a stipe becoming longer than the pedicel.

In dry soil, Nebraska to Washington and Arizona. June–Sept.

2. CRISTATÉLLA Nutt. Journ. Acad. Phil. 7: 85. *pl. 9.* 1834.

Annual viscid glandular-pubescent herbs, with digitately 3-foliolate leaves, and small white or yellowish flowers in terminal bracted racemes. Sepals spreading, slightly united at the base. Petals 4, laciniate or fimbriate at the summit, borne on long slender claws, the 2 lower smaller than the 2 upper. Receptacle short, with a short petaloid nectary between the ovary and the upper sepal. Stamens 6–14; filaments slender, declined. Ovary stalked, also declined. Capsule linear, nearly terete, many-seeded. [Diminutive of *cristatus*, crested.]

A genus of 2 species natives of the south-central United States.

1. Cristatella Jàmesii T. & G. James' Cristatella. (Fig. 1794.)

Cristatella Jamesii T. & G. Fl. N. A. 1: 124. 1838.

Erect, slender, branching, 6′–15′ high. Leaves slender-petioled; leaflets nearly sessile, linear or linear-oblong, longer than the petiole, entire, obtuse, 4″–12″ long; flowers slender-pedicelled, whitish or yellowish; bracts mostly 3-foliolate; claws of the larger petals 1½″–2½″ long; sepals acute or obtusish; pod ascending, much longer than its stipe and somewhat longer than the pedicel.

In dry soil, Nebraska to Louisiana and Texas. June–Dec.

3. CLEOMÉLLA DC. Prodr. 1: 237. 1824.

Annual glabrous branching erect or diffuse herbs, with small yellow flowers and 3-foliolate leaves. Calyx of 4 sepals. Petals 4, sessile, not clawed. Receptacle short, glandless. Stamens 6, inserted on the receptacle. Ovary short, long-stalked. Capsule short, rhomboid or trapezoid, often broader than long, 4–10-seeded. [Diminutive of *Cleome*.]

A genus of about 8 species, natives of southwestern North America, extending into Mexico.

1. Cleomella angustifòlia Torr. Northern Cleomella. (Fig. 1795.)

Cleomella angustifolia Torr.; A. Gray, Pl. Wright. 1: 12. 1852.

Generally erect, 1°–1½° high, branching above. Leaflets linear-lanceolate or linear-oblong, longer than the petiole; bracts linear, simple; flowers yellow, 2″–3″ broad; pedicels very slender, ½′ long in fruit; pod flattened, rhomboid, 2″–3″ broad, about 2″ high, pointed, raised on a very slender stipe 2″–4″ long, its valves almost conic; placentae persistent after the valves fall away, each bearing about 3 seeds.

Prairies, Nebraska and Colorado to Texas and New Mexico. Summer.

4. POLANÍSIA Raf. Journ. Phys. 89: 98. 1819.

Annual branching herbs, mainly glandular-pubescent and exhaling a strong disagreeable odor, with whitish or yellowish flowers, and palmately compound or rarely simple leaves. Sepals 4, lanceolate, deciduous. Petals slender or clawed. Receptacle depressed, bearing a gland at the base of the ovary. Stamens 8–∞, somewhat unequal. Pod nearly or quite sessile on its pedicel, elongated, cylindric or compressed, its valves dehiscent from the summit. Seeds rugose or reticulated. [Greek, very unequal, referring to the stamens.]

A genus of about 14 species, natives of temperate and tropical regions. In addition to the following, 2 other species are found in the southern and western parts of North America.

Stamens equalling or slightly exceeding the petals; flowers 2″–3″ long. 1. *P. graveolens.*
Stamens much exceeding the petals; flowers 4″–6″ long. 2. *P. trachysperma.*

1. Polanisia gravèolens Raf. Clammy-weed. (Fig. 1796.)

Cleome dodecandra Michx. Fl. Bor. Am. 2: 32. 1803. Not L. 1753.

Polanisia graveolens Raf. Am. Journ. Sci. 1: 378. 1819.

Viscid and glandular-pubescent, branching, 6′–18′ high. Leaves 3-foliolate, slender-petioled; leaflets oblong, obtuse, entire, 6″–12″ long; sepals purplish, slightly unequal; petals cuneate, clawed, deeply emarginate or obcordate, yellowish-white; stamens 9–12, purplish, equalling or slightly exceeding the petals; style about 1″ long; pod lanceolate-oblong, slightly compressed, 1′–1½′ long, 3″–4″ wide, slightly stipitate, rough, reticulated; seeds rough.

Sandy and gravelly shores, western Quebec to Manitoba and the Northwest Territory, south to southern New York, Pennsylvania, Kansas and Colorado. Summer.

2. Polanisia trachyspérma T. & G.
Large-flowered Clammy-weed.
(Fig. 1797.)

Polanisia trachysperma T. & G. Fl. N. A. 1: 669. 1840.

Jacksonia trachysperma Greene, Pittonia, 2: 175. 1891.

Similar to the last, but flowers twice the size (4″–6″ long); style slender, 2″–3″ long; stamens much exserted, often twice the length of the petals; filaments purple, conspicuous; pod slightly larger, nearly or quite sessile.

Prairies, Iowa to Texas, west to British Columbia, Nevada and Arizona. Summer.

Family 34. **RESEDÀCEAE** S. F. Gray, Nat. Arr. Brit. Pl. 2: 665. 1821.
MIGNONETTE FAMILY.

Annual or perennial herbs, rarely somewhat woody, with alternate or fascicled leaves, gland-like stipules and racemose or spicate, bracted flowers. Flowers unsymmetrical. Calyx 4–7-parted, more or less inequilateral. Petals generally 4–7, cleft or entire, hypogynous. Disk fleshy, hypogynous, 1-sided. Stamens 3–40, mainly inserted on the disk; filaments generally unequal. Ovary 1, compound, of 3–6 carpels; styles or sessile stigmas 3–6; ovules ∞. Fruit capsular in all but 1 genus. Seeds reniform, without endosperm; cotyledons incumbent.

Six genera and about 65 species, mainly natives of the Mediterranean region.

1. RESÈDA L. Sp. Pl. 448. 1753.

Erect or decumbent herbs, with entire lobed or pinnatifid leaves, and small spicate or narrowly racemose flowers. Petals 4–7, toothed or cleft. Disk cup-shaped, glandular. Stamens 8–30, inserted on one side of the flower and on the inner surface of the disk. Capsule 3–6-lobed, horned, opening at the top before the seeds mature. [Ancient Latin name, referring to the supposed sedative effects of some of the species.]

About 55 species, all natives of the Old World.

Leaves entire; upper petals lobed, the lower entire. 1. *R. Luteola.*
Leaves lobed or pinnatifid.
Petals greenish-yellow, 3 or 4 of them divided. 2. *R. lutea.*
Petals white, all of them cleft or divided. 3. *R. alba.*

1. Reseda Lutèola L. Dyer's Rocket.
Yellow-weed. (Fig. 1798.)

Reseda Luteola L. Sp. Pl. 448. 1753.

Glabrous, erect, simple, or sparingly branched above, 1°–2½° high. Leaves lanceolate or linear, entire, obtuse, sessile or the lowest narrowed into a petiole; flowers greenish-yellow, 1″–2″ broad, in long narrow spikes; sepals 4; petals 4 or 5, very unequal, the upper ones lobed, the lower entire; capsule globose, 2″–3″ in diameter, with 3 or 4 apical teeth and 6–8 lateral ridges.

In waste places, Long Island, N. Y.; also in the western part of the State (Gray), and in ballast about the seaports. Adventive from Europe. Cultivated for its yellow dye. Summer. Also called Dyer's Weed, Dyer's Mignonette and Weld.

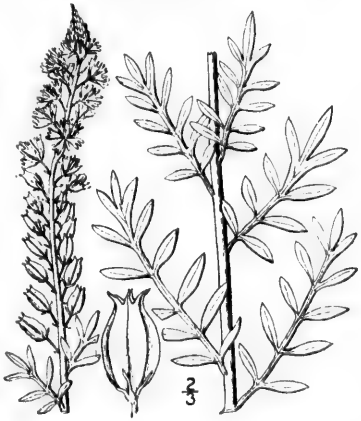
2. Reseda lùtea L. Yellow Cut-leaved Mignonette. (Fig. 1799.)

Reseda lutea L. Sp. Pl. 449. 1753.

Ascending or decumbent, pubescent with short scattered stiff hairs, or nearly glabrous. Leaves 2′–4′ long, broadly ovate or oblong in outline, deeply lobed or divided, sometimes pinnatifid, their segments linear or oblong, obtuse, the margins undulate; flowers greenish-yellow, 2″–3″ broad, in narrow racemes; pedicels ascending, about 2″ long in fruit; petals 6 or 5, all but the lowest irregularly cleft; sepals of the same number; capsule oblong, about 4″ long, 1½″–2″ wide, with three or rarely 4 short teeth.

In waste places, Nantucket, Mass., to New Jersey and Michigan, and in ballast about the seaports. Adventive from Europe. Summer. Called also Crambling Rocket.

Reseda odoràta L., the Mignonette of the gardens, has wedge-shaped entire or 3-lobed leaves, and very fragrant flowers with deeply cleft petals.



3. Reseda álba L. White Cut-leaved Mignonette. (Fig. 1800.)

Reseda alba L. Sp. Pl. 449. 1753.

Erect, glabrous, somewhat glaucous, 1°–3° high. Leaves often crowded, pinnate or deeply pinnatifid, the segments 9–12, linear, linear-oblong or lanceolate, obtusish, entire or undulate, 4″–12″ long; flowers nearly or quite white, 2″–3″ broad, in dense spike-like racemes; pedicels short; petals 6 or 5, all 3-cleft at the summit; sepals of the same number; capsule ovoid-oblong, usually 4-toothed, 5″–6″ long.

In waste places, Buffalo, N. Y.; Youngstown, Ohio, in ballast about the eastern seaports and in British Columbia. Adventive from southern Europe. July–Aug.

Family 35. **SARRACENIÀCEAE** La Pyl. Mem. Soc. Linn. Paris, 6: 379. 1827.

PITCHER-PLANT FAMILY.

Marsh herbs, with basal tubular or pitcher-shaped leaves, and large scapose nodding flowers. Sepals 4 or 5, hypogynous, imbricated, persistent. Petals 5, imbricated, hypogynous, deciduous or none. Stamens ∞; anthers versatile. Ovary 1, 3–5-celled; ovules ∞, in many rows. Capsule 3–5-celled, loculicidally dehiscent; style terminal, peltate, lobed, or in one genus simple. Seeds small, the testa reticulated; embryo small; endosperm fleshy.

Three genera and about 10 species, all natives of America. Besides the following genus, *Chrysamphora* of California and *Heliamphora* of Venezuela are the only known members of the family.

1. SARRACÈNIA L. Sp. Pl. 510. 1753.

Leaves hollow, pitcher-form or trumpet-shaped, with a lateral wing and a terminal lid or lamina. Sepals 5, with 3 or 4 bracts at the base. Petals 5, ovate or oblong. Ovary 5-celled. Style dilated at the apex into a peltate umbrella-like structure with 5 rays which terminate under its angles in hooked stigmas. Capsule 5-celled, granular, rugose. Seeds anatropous. [Named in honor of Dr. Jean Antoine Sarracin, a botanist of Quebec.]

About 8 species natives of eastern and southeastern North America.

Leaves pitcher-shaped, curved; flower purple or greenish (rarely yellow). 1. *S. purpurea.*
Leaves tubular-trumpet-shaped; flower yellow. 2. *S. flava.*

1. Sarracenia purpùrea L. Pitcher-plant. Side-saddle Flower. (Fig. 1801.)

Sarracenia purpurea L. Sp. Pl. 510. 1753.

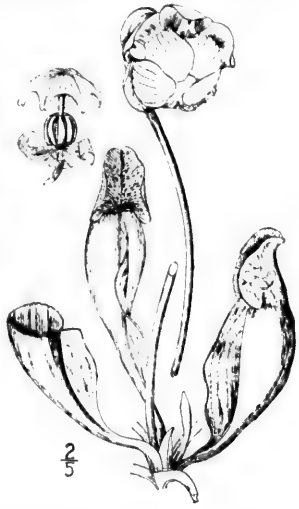
Glabrous, except the inner side of the lamina and inner surface of the pitchers, which are densely clothed with stiff reflexed hairs. Leaves tufted, ascending, curved, 4′–12′ long, purple-veined, or sometimes green all over, much inflated, narrowed into a petiole below, broadly winged, persistent; scapes 1°–2° high, slender, bearing a single nodding deep purple nearly globose flower 2′ in diameter or more; petals obovate, narrowed in the middle, incurved over the yellowish style.

In peat-bogs, Labrador to the Canadian Rocky Mountains, Florida, Kentucky and Minnesota. May–June. The hollow leaves are commonly more or less completely filled with water containing drowned insects. Young plants often bear several smaller flat obliquely ovate leaves. Called also Huntsman's Cup and Indian Cup.

Sarracenia purpùrea heterophýlla (Eaton) Torr. Fl. N. Y. 1: 41. 1843.

Sarracenia heterophylla Eaton, Man. Ed. 3, 447. 1822.

Flowers yellow; leaves slightly or not at all purple-veined, light green or yellowish. Massachusetts and New York to New Jersey.



2. Sarracenia flàva L. Trumpets. Trumpet-leaf. (Fig. 1802.)

Sarracenia flava L. Sp. Pl. 510. 1753.

Glabrous throughout. Leaves trumpet-shaped, 1°–3° long, 1′–2′ wide at the orifice, narrowly winged, prominently ribbed, green, the lid 1′–4′ wide, obtuse or acuminate, erect, contracted at the base; scape 1°–2° high, slender; flower 2′–3′ broad, yellow; petals narrow, oblanceolate or obovate, sometimes 3′ long, drooping, slightly contracted at the middle.

In bogs, Virginia (?), North Carolina to Florida, west to Louisiana. April.

Family 36. **DROSERÀCEAE** S. F. Gray, Nat. Arr. Brit. Pl. 2: 664. 1821.

Sundew Family.

Perennial or biennial glandular-pubescent herbs, exuding a copious viscid secretion, mostly with basal leaves, circinate in the bud, and fugacious perfect flowers, racemose in our species. Calyx persistent, 4–5-parted or the sepals distinct and imbricated. Petal 5, hypogynous, convolute, marcescent, distinct or slightly united at the base. Stamens 4–20, hypogynous or perigynous; filaments subulate or filiform; anthers usually versatile. Disk none. Ovary free, or its base adnate to the calyx, globose or ovoid, 1–3-celled; styles 1–5, simple, 2-cleft or multifid; ovules numerous. Capsule 1–5-celled, loculicidally dehiscent. Seeds several or numerous; endosperm fleshy; embryo straight, cylindric.

Six genera and about 125 species, of wide geographic distribution.

1. DROSERA L. Sp. Pl. 281. 1753.

Bog herbs, with basal leaves clothed with glandular hairs which secrete a fluid that entraps insects, and scapose racemose flowers. Calyx-tube short, free from the ovary, very deeply 4–8-parted (commonly 5-parted). Petals usually 5, spatulate. Stamens as many as the petals; anthers short, extrorse. Ovary 1-celled; styles 2–5, usually 3, distinct or united at the base, often deeply 2-parted so as to appear twice as many, or fimbriate. Capsule 3-valved (rarely 5-valved), many-seeded, generally stipitate in the calyx. [Name from the Greek, dew, in allusion to the dew-like drops exuded by the glands of the leaves.]

About 110 species, most abundant in Australia. Besides the following, 2 others occur in the southeastern States. Our species are known as Sundew, or Dew-plant.

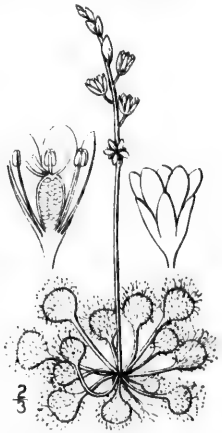
Blade of the leaf orbicular, or wider than long; petals white. 1. *D. rotundifolia.*
Blade of the leaf linear, or longer than wide.
Leaves linear or spatulate with a distinct petiole; petals white.
Blade of the leaf spatulate.
Blade 2–3 times as long as wide. 2. *D. intermedia.*
Blade 6–8 times as long as wide. 3. *D. longifolia.*
Blade linear, 10–15 times as long as wide. 4. *D. linearis.*
Leaves filiform, much elongated, with no distinct petiole; petals purple. 5. *D. filiformis.*

1. Drosera rotundifòlia L. Round-leaved Sundew or Dew-plant. (Fig. 1803.)

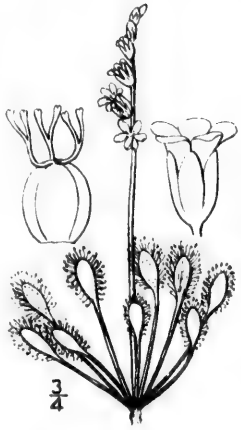
Drosera rotundifolia L. Sp. Pl. 281. 1753.

Scape slender, erect, glabrous, 4′–10′ high. Leaves orbicular or broader, spreading on the ground, the blade 3″–6″ long, abruptly narrowed into a flat pubescent petiole ½′–2′ long, the upper surface covered with slender glandular hairs; raceme 1-sided, simple or sometimes once forked, 4–12-flowered; pedicels 1″–2″ long; flowers white, about 2″ broad, opening in sunshine; petals oblong, somewhat exceeding the sepals; seeds fusiform, pointed at both ends, the testa loose.

In bogs or wet sand, Labrador to Alaska south to Florida and Alabama, and in the Sierra Nevada to California. Ascends to 2500 ft. in the Catskills. Also in Europe and Asia. Rootstock usually short. Called also Rosa-solis, Youth-wort. July–Aug.



2. Drosera intermèdia Hayne. Spatulate-leaved Sundew. (Fig. 1804.)



Drosera intermedia Hayne in Schrad. Journ. Bot 1800: Part 1, 37.

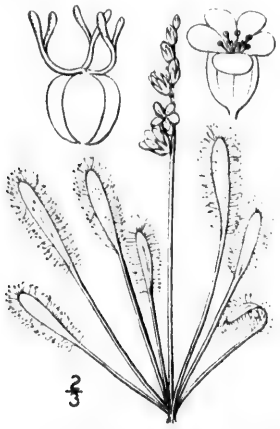
Drosera longifolia Michx. Fl. Bor. Am. 1: 186. 1803. Not L. 1753.

Drosera Americana Willd. Enum. 340. 1809.

Drosera intermedia var. *Americana* DC. Prodr. 1: 318. 1824.

Rootstock elongated (2′–4′ long when growing in water). Scape erect, glabrous, 3′–8′ high. Blades of the leaves ascending, spatulate, obtuse at the apex, 3″–7″ long, 1½″–2″ wide, their upper surfaces clothed with glandular hairs, gradually narrowed into a glabrous petiole ½′–1½′ long; raceme 1-sided; flowers several; pedicels about 1½″ long; petals white, slightly exceeding the sepals; seeds oblong, the testa close, roughened.

In bogs, Anticosti and New Brunswick to Manitoba, south to Florida and Louisiana. Also in the West Indies, and in northern Europe. July–Aug.



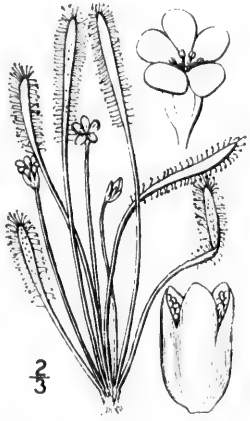
3. **Drosera longifòlia** L. Oblong-leaved Sundew. (Fig. 1805.)

Drosera longifolia L. Sp. Pl. 282. 1753.

Drosera Anglica Huds. Fl. Angl. Ed. 2, 135. 1778.

Similar to the preceding species, but the leaf-blade is erect, longer (8″–15″ long, 1½″–2″ wide), elongated-spatulate and narrowed into a glabrous petiole 1′–4′ long; pedicels ½″–3″ long; flowers several, racemose, white, 2″–2½″ broad; seeds oblong, obtuse at both ends, the testa loose.

In bogs, Newfoundland and arctic America to Manitoba and British Columbia, south to Ontario and California. Also in northern Europe and Asia. Summer.

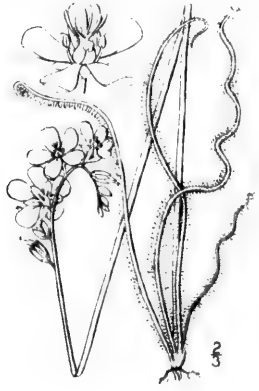


4. **Drosera lineàris** Goldie. Slender-leaved Sundew. (Fig. 1806.)

Drosera linearis Goldie, Edinb. Phil. Journ. 6: 325. 1822.

Scape low but sometimes exceeding the leaves, glabrous. Petioles erect, glabrous, 2′–4′ long; blade linear, 1′–3′ long, about 1″ wide, densely clothed with glandular hairs, obtuse at the apex; flowers few, or solitary, white; petals somewhat exceeding the sepals; seeds oblong, the testa close, smooth and somewhat shining.

In bogs, shores of Lake Superior and Lake Huron, west to the Canadian Rocky Mountains. Blooms a little later than *D. rotundifolia* when the two grow together.



5. **Drosera filifórmis** Raf. Thread-leaved Sundew. (Fig. 1807.)

Drosera filiformis Raf. Med. Rep. (II.) 5: 360. 1808.

Drosera tenuifolia Willd. Enum. 340. 1809.

Scape erect, glabrous, 8′–20′ high. Leaves narrowly linear or filiform, glandular-pubescent throughout, 6′–15′ long, about 1″ wide, usually acutish at the apex, with no distinction between blade and petiole, woolly with brown hairs at the very base; racemes 1-sided, 10–30-flowered; pedicels 2″–4″ long; flowers purple, 4″–12″ broad; petals obovate, much exceeding the sepals; seeds fusiform, acute at each end, the testa minutely punctate.

In wet sand, near the coast, eastern Massachusetts to Florida. July–Sept.

Family 37. **PODOSTEMÀCEAE** Lindl. Nat. Syst. Ed. 2, 190. 1836.

RIVER-WEED FAMILY.

Small aquatic fresh-water mostly annual fleshy herbs, the leaves usually poorly differentiated from the stem, the whole structure commonly resembling the thallus of an alga or hepatic, the small usually perfect flowers devoid of any perianth and subtended by a spathe-like involucre, or in some genera with a 3–5-cleft membranous calyx. Stamens hypogynous, only 2 in the following genus, numerous in some others; filaments united or distinct; anthers 2-celled, the sacs longitudinally dehiscent. Ovary stalked or sessile, 2–3-celled; ovules usually numerous in each cell, anatropous; styles 2 or 3, short. Capsules 2–3-celled, ribbed. Seeds numerous, minute, without endosperm; embryo straight.

About 21 genera and 175 species, mostly in the tropics, only the following North American.

1. **PODOSTÈMON** Michx. Fl. Bor. Am. **2**: 164. *pl. 44.* 1803.

Habit of the several species various. Flowers sessile or very nearly so in the spathe-like involucre. Perianth none. Stamens 2, their filaments united to near the summit; anthers 2, oblong or oval. Staminodia 2, filiform. Ovary ovoid, 2-celled; stigmas 2, nearly erect, short, subulate. Capsule ovoid, 6–10-ribbed, 2-valved. [Greek, stalked-stamens.]

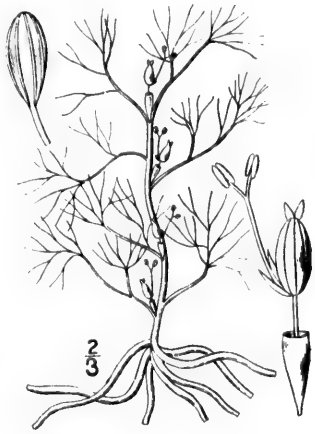
About 12 species of rather wide geographic distribution.

1. Podostemon Ceratophýllum Michx. River-weed. Thread-foot. (Fig. 1808.)

Podostemon Ceratophyllum Michx. Fl. Bor. Am. **2**: 165. 1803.

Plant dark green, rather stiff, firmly attached to stones in running water, densely tufted, 1′–10′ long, the leaves narrowly linear, sheathing at the base, commonly split above into almost filiform segments or lobes. Flowers less than 1″ broad, at length bursting from the spathes; capsule oblong-oval, rather more than 1″ long, obtuse, borne on a stipe of about its own length, 8-ribbed; stigmas at length recurved.

In shallow streams, Massachusetts to northern New York, Ontario and Minnesota, south to Georgia, Alabama and Kentucky. July–Sept.



Family 38. **CRASSULÀCEAE** DC. Fl. Franc. **4**: 382. 1805.

ORPINE FAMILY.

Herbs, or somewhat shrubby plants, mostly fleshy or succulent, with cymose or rarely solitary regular or symmetrical flowers. Stipules none. Calyx persistent, free from the ovary or ovaries, 4–5-cleft or 4–5-parted in our species. Petals equal in number to the calyx-lobes, distinct, or slightly united at the base, usually persistent, rarely wanting. Stamens of the same number or twice as many as the petals; filaments filiform or subulate; anthers longitudinally dehiscent. Receptacle with a scale at the base of each carpel. Carpels equal in number to the sepals, distinct, or united below; styles subulate or filiform; ovules numerous, arranged in 2 rows along the ventral suture. Follicles membranous or coriaceous, 1-celled, dehiscent along the ventral suture. Seeds minute; endosperm fleshy; embryo terete; cotyledons short, obtuse.

About 15 genera and 500 species, of wide geographic distribution.

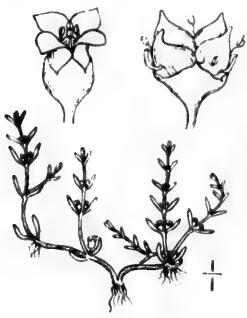
Carpels distinct to the base; plants very succulent.
Stamens of the same number as the sepals; minute herbs. 1. *Tillaea.*
Stamens twice as many as the sepals; succulent herbs.
Flowers 4–5-parted. 2. *Sedum.*
Flowers 6–12-parted. 3. *Sempervivum.*
Carpels united to about the middle; plant scarcely succulent. 4. *Penthorum.*

1. TILLAÈA L. Sp. Pl. 128. 1753.

Minute, mostly glabrous, aquatic or mud-loving succulent herbs, with opposite entire leaves and very small solitary or cymose-paniculate axillary or terminal flowers. Calyx 3–5-parted. Petals 3–5, distinct, or united at the base. Stamens 3–5. Carpels 3–5, distinct. Styles short, subulate. Ovules usually few. Follicles few-seeded or several-seeded. [Named after Michael Angelo Tilli, 1653–1740, an Italian botanist.]

About 20 species, of very wide geographic distribution. Besides the following, about 4 others occur in the western and southwestern States.

1. Tillaea aquática L. Pigmy-weed. (Fig. 1809.)



Tillaea aquatica L. Sp. Pl. 128. 1753.

Tillaea simplex Nutt. Journ. Acad. Phil. 1: 114. 1817.

Bulliarda aquatica DC. Prodr. 3: 382. 1828.

Stem ascending or erect, usually simple, ½′–3′ high, glabrous. Leaves linear-oblong, entire, acutish or obtuse at the apex, connate at the base, 2″–3″ long, at length shorter than the internodes; flowers solitary, axillary, sessile or short-peduncled, ½″ broad; calyx-lobes, petals, stamens and carpels 4, rarely 3; petals greenish, about twice the length of the calyx-lobes; follicles ovoid, longer than the calyx-lobes, 8–10-seeded.

Muddy banks of streams, Nova Scotia to Massachusetts and Maryland, near the coast. Stem often rooting at the nodes. Also in Europe. July–Sept.

2. SÈDUM L. Sp. Pl. 430. 1753.

Fleshy mostly glabrous herbs, erect or decumbent, mainly with alternate, often imbricated, entire or dentate leaves, and perfect or dioecious flowers in terminal often 1-sided cymes. Calyx 4–5-lobed. Petals 4–5, distinct. Stamens 8–10, perigynous, the alternate ones usually attached to the petals. Filaments filiform or subulate. Scales of the receptacle entire or emarginate. Carpels 4–5, distinct, or united at the base; styles usually short; ovules ∞. Follicles many-seeded or few-seeded. [Latin, to sit, from the lowly habit of these plants.]

About 150 species, mostly natives of temperate and cold regions of the northern hemisphere, a few in the mountains of Mexico and the Andes of South America. Besides the following, about 20 others occur in the western parts of North America.

Cyme regular, compound, the flowers not secund; leaves broad, flat.
Flowers dioecious, mostly 4-parted. 1. *S. roseum.*
Flowers perfect, 5-parted.
Petals purple; plant somewhat glaucous; petals twice as long as the sepals. 2. *S. Telephium.*
Petals pink; plant very glaucous; petals 3–4 times as long as the sepals. 3. *S. telephioides.*
Flowers secund along the branches of the cyme.
Petals yellow.
Leaves short, thick, ovate, densely imbricated. 4. *S. acre.*
Leaves linear or terete, scattered on the stems.
Annual; petals little longer than the sepals. 5. *S. Torreyi.*
Perennial; petals twice as long as the sepals.
Plant 3′–6′ high; native, western. 6. *S. stenopetalum.*
Plant 8′–12′ high; introduced in a few places. 7. *S. reflexum.*
Petals purple or white.
Leaves terete; petals purple, pink, or white. 8. *S. pulchellum.*
Leaves flat, spatulate or obovate; petals white.
Lower leaves verticillate in 3's. 9. *S. ternatum.*
Leaves all alternate. 10. *S. Nevii.*

1. **Sedum rhòseum** (L.) Scop. Roseroot. Rosewort. (Fig. 1810.)

Rhodiola rosea L. Sp. Pl. 1035. 1753.
Sedum roseum Scop. Fl. Carn. Ed. 2, 326. 1772.
Sedum Rhodiola DC. Plantes Gras. *pl. 143.* 1805.

Perennial, branched at the base, or simple, erect or ascending, glabrous and somewhat glaucous, 4′–12′ high. Leaves sessile, oval or slightly obovate, acute or obtuse at the apex, narrowed or rounded at the base, dentate or entire, 6″–12″ long, 3″–5″ wide, the lower ones smaller; cyme terminal, dense, ½′–2′ broad; flowers dioecious, yellowish-green or purplish, 2½″–4″ broad; sepals oblong, narrower and shorter than the petals; staminate flowers with 8 (rarely 10) stamens, the pistillate ones with 4 (rarely 5) carpels; follicles purple, about 2″ long, their tips spreading.

In rocky places, Labrador and arctic America to Maine, the Nockamixon Rocks on the Delaware River, and on the southern Alleghanies. Also in the Rocky Mountains south to Colorado, in the mountains of Washington, and in northern and alpine Europe and Asia. Root rose-scented. Snowdon Rose. May–July.

2. **Sedum Telèphium** L. Orpine. Live-forever. (Fig. 1811.)

Sedum Telephium L. Sp. Pl. 430. 1753.

Perennial, stems erect, stout, simple, tufted, glabrous and slightly glaucous, 1°–1½° high. Leaves alternate, ovate, broadly oval or obovate, obtuse, 1′–2′ long, coarsely dentate, the upper sessile and rounded at the base, the lower larger, narrowed at the base or sometimes petioled; cyme dense, regular, compound, 2′–3′ broad; flowers perfect, 2½″–4″ broad, 5-parted; petals purple, twice as long as the ovate acute sepals; stamens 10; follicles about 2″ long, tipped with a short style.

In fields and along roadsides, Quebec to Ontario, south to Maryland and Michigan. Naturalized from Europe and native of western Asia. Blooms sparingly, but spreads freely by its joints. Also called Live-long, Aaron's Rod, and Midsummermen. June–Sept.

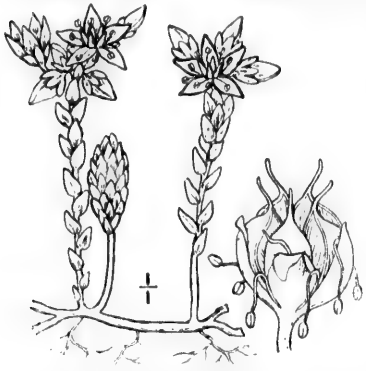
3. **Sedum telephioides** Michx. American Orpine. (Fig. 1812.)

Sedum telephioides Michx. Fl. Bor. Am. 1: 277. 1803.

Similar to the preceding species, but more slender, seldom over 10′ high, very glaucous and purplish throughout. Leaves oval or obovate, obtuse, coarsely dentate or entire, 1′–2′ long, all narrowed at the base and petioled or the uppermost sessile; cyme dense, regular, 2′–4′ broad; flowers perfect, 3″–4″ broad, 5-parted; petals pale pink, much longer than the lanceolate sepals; follicles about 2″ long, tipped with a slender style.

On dry rocks, southern Pennsylvania and Maryland to western New York and southern Indiana, south to North Carolina and Georgia. Reported from farther north. Ascends to 4200 ft. in North Carolina. Aug.–Sept.

4. Sedum àcre L. Wall-pepper. Biting, or Mossy Stonecrop. (Fig. 1813.)



Sedum acre L. Sp. Pl. 432. 1753.

Perennial, densely tufted, spreading and matted, glabrous; sterile branches prostrate, the flowering ones erect or ascending, 1′–3′ high. Leaves sessile, alternate, ovate, very thick, densely imbricated, light yellowish green, entire, about 1½″ long, those of the sterile branches usually arranged in 6 rows; cyme 2–3-forked, its branches ½′–1′ long; flowers sessile, about 4″ broad; petals bright yellow, linear-lanceolate, acute, 3 or 4 times as long as the ovate sepals; central flower of the cyme commonly 5-parted, the others usually 4-parted as in all the following species; follicles spreading, 1½″–2″ long, tipped with a slender style.

On rocks and along roadsides, escaped from cultivation, New Brunswick to Ontario, south to southern New York and Pennsylvania. Adventive from Europe. Native also of northern Asia. Also called Bird's-bread, Creeping Jack, Pricket, Golden-moss, Little Houseleek and Gold Chain. June–Aug.

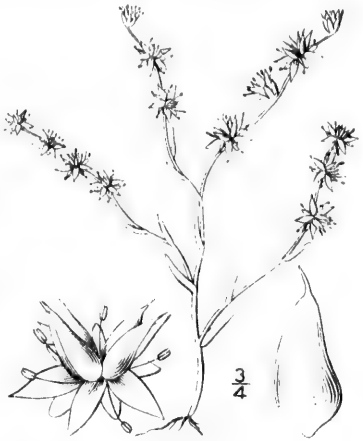
5. Sedum Tórreyi Don. Torrey's Stonecrop. (Fig. 1814.)

Sedum Torreyi Don, Gard. Dict. 3: 121. 1834.

Sedum sparsiflorum Nutt.; T. & G. Fl. N. A. 1: 559. 1840.

Annual, low, tufted, glabrous, 2′–3′ high. Leaves alternate, scattered, linear-oblong, teretish, sessile, entire, 2″–4″ long; cyme 2–5-forked, its branches ½′–2′ long; flowers sessile or very short-pedicelled, about 3½″ broad; petals yellow, lanceolate, acute, somewhat longer than the ovate sepals; follicles widely divergent, tipped with the short subulate style.

In dry, open places, Missouri and Arkansas to Texas. May.



6. Sedum stenopétalum Pursh. Narrow-petaled Stonecrop. (Fig. 1815.)

Sedum stenopetalum Pursh, Fl. Am. Sept. 324. 1814.

Perennial, tufted, glabrous; flowering branches erect, 3′–7′ high. Leaves alternate, crowded but scarcely imbricated, except on the sterile shoots, sessile, terete or linear, 3″–8″ long, entire; cyme 3–7-forked, compact, the branches ½′–1′ long; flowers mostly short-pedicelled, 4″–5″ broad; petals narrowly lanceolate, very acute, yellow, much exceeding the calyx-lobes; follicles about 2″ long, their subulate style-tip at length somewhat divergent.

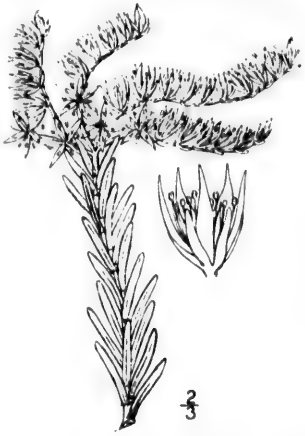
In dry rocky places, Nebraska and Colorado to Dakota and the Northwest Territory, west to Utah, Oregon and British Columbia. May–June.

7. **Sedum reflexum** L. Crooked Yellow or Reflexed Stonecrop. Dwarf Houseleek. (Fig. 1816.)

Sedum reflexum L. Sp. Pl. Ed. 2, 618. 1762.

Perennial by a creeping stem producing numerous short barren shoots, the flowering branches erect, 8′–14′ high. Leaves alternate, sessile, densely imbricated on the sterile shoots, terete, somewhat spurred at the base, 3″–9″ long; cyme 4–8-forked, its branches recurved in flower; flowers 4″–6″ broad; petals linear, yellow, two to three times as long as the short ovate sepals; follicles about 1½″ long, tipped with a very slender somewhat divergent style.

Eastern Massachusetts and western New York, escaped from gardens. Native of Europe. Summer.



8. **Sedum pulchéllum** Michx. Widow's Cross. (Fig. 1817.)

Sedum pulchellum Michx. Fl. Bor. Am. 1: 277. 1803.

Perennial (?), glabrous, ascending or trailing, branched at the base, 4′–12′ long. Leaves densely crowded, terete or linear, sessile, obtuse at the apex, slightly auriculate at the base, 3″–12″ long, about 1″ wide; cyme 4–7-forked, its branches spreading or recurved in flower; flowers sessile, close together, 4″–6″ broad; petals rose-purple, pink, or white, linear-lanceolate, acute, about twice the length of the lanceolate obtusish sepals; follicles 2″–3″ long, tipped with a slender style.

On rocks, Virginia to Georgia, west to Indiana, Kentucky, Missouri and Texas. May–July. Cultivated in the South under the above name.

9. **Sedum ternàtum** Michx. Wild Stonecrop. (Fig. 1818.)

S. ternatum Michx. Fl. Bor. Am. 1: 277. 1803.

Perennial, glabrous, tufted, stems creeping, flowering branches ascending, 3′–8′ high. Lower leaves and those of the sterile shoots flat, obovate, entire, 6″–12″ long, sometimes 9″ wide, rounded at the apex, cuneate at the base or narrowed into a petiole, verticillate in 3's; upper leaves oblanceolate or oblong, alternate, sessile; cyme 2–4-forked, its branches spreading or recurved in flower; flowers rather distant, often leafy-bracted, about 5″ broad; petals linear-lanceolate, acute, white, nearly twice the length of the oblong obtuse sepals; follicles 2½″ long, tipped with the slender style.

On rocks, New York and New Jersey to Georgia, west to Indiana and Tennessee. Also escaped from gardens to roadsides in the Middle and Eastern States. Ascends to 3000 ft. in Virginia. April–June.

10. Sedum Nèvii A. Gray. Nevius' Stonecrop. (Fig. 1819.)

Sedum Nevii A. Gray, Man. Ed. 5, 172. 1867.

Densely tufted, glabrous, stems spreading or decumbent, flowering branches ascending, 3′–5′ high. Leaves of the sterile shoots very densely imbricated, spatulate or obovate, narrowed or cuneate at the base, mostly sessile, rounded at the apex, entire, 3″–6″ long, 1″–2″ wide, the lower ones smaller; leaves of the flowering branches spatulate or linear-oblong, alternate; cyme about 3-forked, its branches usually recurved in flower; flowers close together, 3″–4″ broad; petals linear, acuminate, longer than the sepals; follicles about 2″ long, widely divergent, tipped with the short style.

On rocks, mountains of Virginia to Alabama. May–June

3. SEMPERVÌVUM L. Sp. Pl. 464. 1753.

Fleshy perennial herbs, the thick succulent leaves densely imbricated on the short sterile shoots and scattered on the erect flowering stems, with compound terminal usually dense cymes of showy flowers. Flowers 6–20-parted. Petals distinct, oblong or lanceolate, acute or acuminate. Stamens twice as many as the petals. Styles filiform; ovules ∞. Follicles many-seeded. [Latin, always living.]

About 40 species, natives of the Old World, chiefly distinguished from *Sedum* by the more numerous parts of the flower.

1. Sempervivum tectòrum L. Houseleek. (Fig. 1820.)

Sempervivum tectorum L. Sp. Pl. 464. 1753.

Flowering stems about 1° high, the barren shoots forming lateral nearly globular tufts. Leaves oval or ovate, the lower 1′–1¼′ long, very thick, short-pointed, bordered by a line of stiff short hairs; cyme large, dense; flowers sometimes 1′ broad, pink, sessile along its spreading or recurved branches; petals lanceolate, acute, 2 to 3 times as long as the obtuse ciliate sepals.

Essex Co., Mass., escaped from gardens and reported as well established; Somerset Co., N. J. Native of continental Europe. Summer. Old English names, Homewort, Sengreen and Thunderplant; a fancied protection against lightning, as well as fire.

4. PÉNTHORUM L. Sp. Pl. 432. 1753.

Erect perennial scarcely succulent herbs, with alternate sessile serrate thin leaves, and greenish perfect flowers in forked secund cymes. Calyx 5-parted. Petals usually wanting, if present 5. Stamens 10, hypogynous; filaments filiform. Carpels 5, united to the middle, ovules ∞. Capsule depressed, 5-lobed, 5-beaked, the lobes tipped with divergent styles; many-seeded. [Greek, five, from the symmetrical flower.]

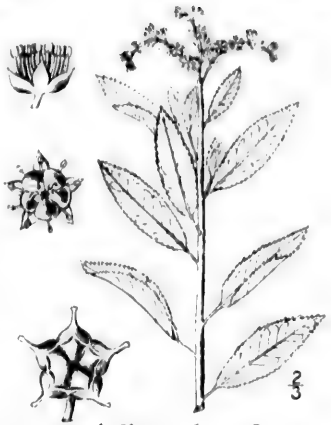
About 3 species, natives of eastern North America, Japan and China. The following is the only one known in North America. The genus is referred to the Saxifrage Family by some authors.

1. Penthorum sedoides L. Ditch or Virginia Stonecrop. (Fig. 1821.)

Penthorum sedoides L. Sp. Pl. 432. 1753.

Glabrous, erect, stem usually branched and angled above, terete below, 6′–2° high. Leaves lanceolate or narrowly elliptic, acuminate at each end, finely serrate, 2′–4′ long, 6″–12″ wide; cymes 2-3-forked, the branches 1′–3′ long; flowers short-pedicelled, about 2″ broad; sepals triangular-ovate, acute, shorter than the flattish capsule; petals often or generally wanting.

In ditches and swamps, New Brunswick to Florida, west to Minnesota and Texas. July–Sept.



Family 39. **SAXIFRAGÀCEAE** Dumort. Anal. Fam. 36. 1829.

SAXIFRAGE FAMILY.

Herbs, shrubs, vines, or trees, with basal or alternate or opposite leaves. Flowers perfect or polygamo-dioecious, solitary, racemose, cymose or paniculate. Calyx 5-lobed or 5-parted (rarely 4–12-lobed or parted), free, or adnate to the ovary, usually persistent. Petals usually 4 or 5, rarely none. Stamens equal in number or twice as many as the petals, in apetalous species as many or twice as many as the calyx-lobes, perigynous or epigynous; filaments distinct. Disk generally present. Carpels 1–several, often 2, distinct or united, mostly fewer than the stamens; styles as many as the carpels or cavities of the ovary, or all united into one. Fruit a capsule, follicle or berry. Seeds commonly numerous; endosperm generally copious, fleshy; embryo small, terete.

About 70 genera and 600 species, of wide geographic distribution, mainly natives of the temperate zones, rare in the tropics.

Herbs; leaves basal or opposite or alternate.	
Staminodia (abortive stamens) none; flowers mostly clustered.	
Large herbs; leaves 3-ternate; flowers polygamous.	1. *Astilbe.*
Leaves simple, cleft, lobed or 3-foliolate; flowers perfect.	
Placentae axial.	
Ovary superior or nearly so; stamens 10.	2. *Saxifraga.*
Ovary more or less adnate to the calyx-tube.	
Stamens 5, in our species.	
Petals deciduous.	3. *Therofon.*
Petals persistent.	4. *Sullivantia.*
Stamens 10.	2. *Saxifraga.*
Placentae almost basal.	5. *Tiarella.*
Placentae parietal.	
Petals present (in our species); terrestrial plants.	
Petals entire.	6. *Heuchera.*
Petals lobed or pinnatifid.	7. *Mitella.*
Petals none; small aquatic plants.	8. *Chrysosplenium.*
Staminodia present, alternate with the stamens; flower solitary.	9. *Parnassia.*
Shrubs, or woody vines; leaves opposite or alternate.	
Leaves opposite.	
Stamens 5–12.	10. *Hydrangea.*
Stamens 20–40.	
Vine; petals small; style only 1.	11. *Decumaria.*
Shrubs; petals large; styles 3–5.	12. *Philadelphus.*
Leaves alternate; flowers small, racemed.	13. *Itea.*

1. **ASTÍLBE** Hamilt.; D. Don. Prodr. Fl. Nepal. 210. 1825.

Erect perennial herbs, with large 2–3-ternate leaves, and small spicate polygamous flowers in terminal panicles. Calyx campanulate, 4–5-lobed. Petals 4–5 (in our species), linear-spatulate, inserted at the base of the calyx. Stamens 8–10, all perfect, inserted with the petals; filaments elongated. Ovary superior or nearly so, 2–3-celled, deeply 2–3-lobed; styles 2–3; stigmas obtuse; ovules ∞. Capsule 2–3-lobed, separating into 2–3 follicle-like carpels, each usually few-seeded. Seeds small, the testa loose, tapering at each end. [Greek without brightness.]

About 7 species, natives of eastern North America, eastern Asia and the Himalayas. Besides the following another species or variety occurs in the southern Alleghanies.

1. **Astilbe biternàta** (Vent.) Britton. False Goat's Beard. Astilbe. (Fig. 1822.)

Tiarella biternata Vent. Jard. Malm. *pl. 54.* 1803.
Spiraea Aruncus var. *hermaphrodita* Michx. Fl. Bor. Am. 1: 294. 1803.
Astilbe decandra D. Don, Prodr. Fl. Nepal. 211. 1825.
Astilbe biternata Britton, Bull. Torr. Club, 20: 475. 1893.

Erect, 3°–6° high, more or less pubescent. Leaves petioled, 2–3-ternately compound, often 2° broad; leaflets thin, stalked, ovate, cordate, truncate or rounded at the base, the lateral ones usually oblique, acuminate at the apex, sharply serrate or incised, 2′–5′ long; panicles often 1° long; flowers sessile or nearly so, about 2″ broad, yellowish white; petals of the staminate flowers spatulate, those of the perfect ones much smaller or none; stamens 10; follicles 2, acute, glabrous, about 1½″ long.

In woods, mountains of Virginia to North Carolina, Georgia and Tennessee. Plant with the aspect of *Aruncus*. June.

2. **SAXÍFRAGA** L. Sp. Pl. 398. 1753.

Perennial herbs, with alternate opposite or basal entire toothed or pinnatifid leaves, and corymbose paniculate or solitary perfect flowers. Calyx-tube free, or adnate to the base of the ovary, 5-lobed. Petals 5, equal, or in some species unequal, perigynous. Stamens 10, inserted with the petals; filaments filiform, club-shaped or subulate; anthers didymous. Ovary superior or partly inferior, 2-celled, 2-lobed at the summit; styles short; stigmas truncate or capitate; ovules ∞, on axial placentae. Capsule 2-beaked, many-seeded. Seeds small, the testa smooth or roughened. [Greek, stone-breaking, from reputed medicinal qualities.]

About 210 species, nearly all natives of the north temperate zone. Besides the following, about 50 others occur in the western parts of North America.

* **Stems prostrate; leaves rounded, opposite; petals purple.** 1. *S. oppositifolia.*

* * **Stems erect or ascending; leaves alternate; petals white or yellow.**

Flowers yellow; leaves entire.
Stems several-flowered; leaves linear. 2. *S. aizoides.*
Stems 1-flowered; leaves oblong. 3. *S. Hirculus.*
Flowers white; leaves 3–7-lobed, mostly wider than long.
Stems 4′–10′ tall; flower commonly solitary, nodding. 4. *S. cernua.*
Stems weak, 2′–5′ long; flowers 1–5, erect. 5. *S. rivularis.*

* * * **Stems scapose, naked or bracted, the leaves clustered at the base.**

† Leaves stiff, oblong or oblanceolate; petals yellow or yellowish.
Leaves sharply 3-toothed at the apex. 6. *S. tricuspidata.*
Leaves with white denticulate margins. 7. *S. Aizoon.*

† † Leaves deeply 3–5-cleft; petals white. 8. *S. caespitosa.*

† † † Leaves soft, obovate or oval with narrowed or spatulate base.
Flowers regular; petals all nearly alike.
Plants large, 1°–3° tall, growing in wet places.
Leaves merely denticulate or repand; follicles ovoid. 9. *S. Pennsylvanica.*
Leaves coarsely and sharply dentate; follicles lanceolate. 10. *S. micranthidifolia.*
Plants low, 2′–18′ tall, growing in dry or rocky places
Petals sessile, not clawed.
Flowers in cymose or at length panicled clusters. 11. *S. Virginiensis.*
Flowers capitate; arctic and alpine species. 12. *S. nivalis.*
Petals narrowed into a claw.
Flowers few, most or all of them replaced by tufts of leaves. 13. *S. comosa.*
Inflorescence loose, cymose-paniculate.
Follicles erect, united to near their summits; styles short. 14. *S. stellaris.*
Follicles divergent, united only at base; styles filiform. 15. *S. Grayana.*
Flowers irregular, 3 petals large, 2 smaller. 16. *S. Michauxii.*

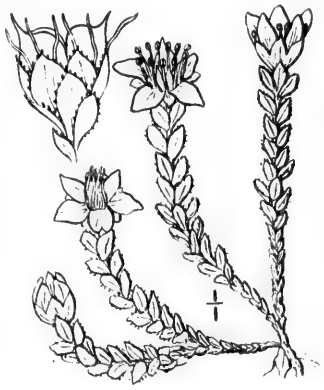
† † † † Leaves soft, orbicular, cordate, dentate all around. 17. *S. Geum.*

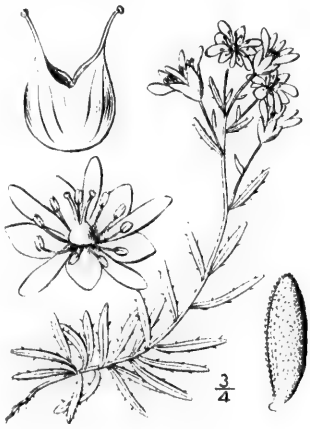
1. Saxifraga oppositifòlia L. Purple or Mountain Saxifrage. (Fig. 1823.)

Saxifraga oppositifolia L. Sp. Pl. 402. 1753.

Tufted, stems prostrate, densely leafy, 2′–10′ long. Leaves sessile, ovate, obovate or nearly orbicular, purplish, persistent, keeled, fleshy, opposite, or imbricated in 4 rows on the sterile shoots, obtuse, punctate with 1–3 pores, 1″–2½″ long, the margins ciliate; flowers solitary, peduncled or nearly sessile, 4″–6″ broad; calyx-lobes obtuse, much shorter than the obovate purple petals; calyx free from the ovary and capsule; follicles abruptly short-pointed; seeds rugose.

On wet rocks, Mt. Mansfield and Willoughby Mountain, Vt.; Anticosti, Newfoundland and throughout arctic America to Alaska, south in the Rocky Mountains to Wyoming and to Oregon. Also in Europe and Asia. Summer.





2. Saxifraga aizoides L. Yellow Mountain Saxifrage. (Fig. 1824.)

Saxifraga aizoides L. Sp. Pl. 403. 1753.

Tufted, glabrous, stems leafy, 2′–6′ high. Leaves alternate, linear, thick, fleshy, mucronate-tipped, narrowed at the base, sessile, 4″–9″ long, 1″–1½″ wide, the margins often sparingly ciliate; flowers several, corymbose, 4″–7″ broad; pedicels rather slender; petals oblong, yellow and sometimes spotted with orange, exceeding the ovate-oblong calyx-lobes; carpels abruptly acuminate; base of the capsule adnate to the calyx; seeds minutely rugose.

On wet rocks, Newfoundland and Labrador to Vermont and western New York, west through arctic America to the Rocky Mountains, south to Michigan. Also in alpine and arctic Europe and Asia. Summer. Also called Sengreen Saxifrage.

3. Saxifraga Hirculus L. Yellow Marsh Saxifrage. (Fig. 1825.)

Saxifraga Hirculus L. Sp. Pl. 402. 1753.

Erect from a slender caudex, glabrous or somewhat pubescent, simple, leafy, 4′–10′ high. Leaves alternate, oblong or linear-oblong, entire, ½′–1½′ long, the lower petioled, the upper sessile; flower terminal, solitary (rarely 2–4), bright yellow with scarlet spots, ½′–1′ broad; calyx-lobes oval or oblong, obtuse, reflexed; petals erect or ascending, obovate or oblong, about 3 times as long as the calyx-lobes; capsule free from the calyx or nearly so, about 4″ long, its beaks at length diverging.

In bogs, Labrador and arctic America. Also in northern and alpine Europe and Asia. Summer.

4. Saxifraga cérnua L. Nodding or Drooping Bulbous Saxifrage. (Fig. 1826.)

Saxifraga cernua L. Sp. Pl. 403. 1753.

Stem weak, slender, ascending, pubescent but scarcely glutinous, 4′–12′ long. Leaves alternate, the basal and lower ones petioled, broadly reniform, palmately 5–7-lobed, usually less than 1′ wide; upper leaves smaller, sessile, 3-lobed or entire and bract-like, often bearing small bulblets in their axils; flowers 1–3, terminal, nodding, white, 4″–5″ broad; petals obovate, sometimes retuse, 3–4 times as long as the ovate calyx-lobes.

Newfoundland, Labrador, and through arctic America to Alaska. Also in arctic and alpine Europe and Asia. Summer.

5. Saxifraga rivulàris L. Alpine Brook Saxifrage. (Fig. 1827.)

Saxifraga rivularis L. Sp. Pl. 404. 1753.

Densely tufted, glabrous or sparingly pubescent, matted, 1′–3′ high. Leaves alternate, the basal and lower ones slender-petioled, reniform, 3–5-lobed, seldom more than 3″ wide; petioles dilated at the base; upper leaves lanceolate or ovate, entire or slightly lobed, mainly sessile; flowers 1–5, terminal, erect, white, about 3″–5″ broad; calyx-lobes ovate, obtuse, slightly shorter than the ovate-oblong petals; tips of the capsule widely divergent, its base adnate to the calyx.

Alpine summits of the White Mountains, Labrador, arctic America and south in the Rocky Mountains to Colorado. Also in arctic and alpine Europe and Asia. Summer.

6. Saxifraga tricuspidàta Retz. Three-toothed Saxifrage. (Fig. 1828.)

Saxifraga tricuspidata Retz. Prodr. Fl. Scand. Ed. 2, 104. 1795.

Tufted, flowering stems strict, erect, 2′–8′ high, the leaves densely clustered at the base, oblong or oblong-spatulate, parchment-like, 4″–7″ long, sharply 2–3-dentate at the apex, narrowed at the base, sessile, the margins ciliate with short hairs; scape bracted; flowers several, corymbose, yellow, 4″–5″ broad; sepals ovate, coriaceous, obtusish, much shorter than the oblong-obovate or narrowly oblong petals; capsule tipped with the diverging styles, its lower part adnate to the calyx.

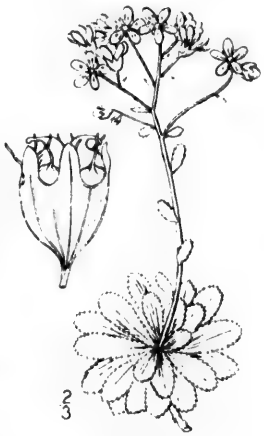
In rocky places, Newfoundland and Labrador to Hudson Bay, west through arctic America to Alaska, south to Lake Superior and in the Canadian Rocky Mountains. Also in arctic Europe. Summer.

7. **Saxifraga Aizòon** Jacq. Livelong Saxifrage. (Fig. 1829.)

Saxifraga Aizoon Jacq. Fl. Austr. **5**: 18. *pl.* 438. 1778.

Leaves clustered in a dense rosette at the base of the bracted flowering scape; plant spreading by offsets, so that several are often joined together. Leaves 4″–12″ long, spatulate, thick, obtuse and rounded at the apex, the margins serrulate with sharp hard white teeth; scape erect, viscid-pubescent, 4′–10′ high; flowers several or numerous, corymbose, yellowish, about 3″ broad; calyx-lobes ovate-oblong, obtuse, viscid, shorter than the obovate, often spotted petals; capsule tipped by the divergent styles, its base adnate to the calyx.

On dry rocks, Mt. Mansfield, Vermont; Quebec to Labrador, west to Lake Superior and Manitoba. Also in alpine and arctic Europe. Summer.



8. **Saxifraga caespitòsa** L. Tufted Saxifrage. (Fig. 1830.)

Saxifraga caespitosa L. Sp. Pl. 404. 1753.

Densely tufted, leaves clustered at the base, spatulate or fan-shaped, 3″–9″ long, deeply 3–5-cleft or lobed into linear obtuse segments, glabrous; flowering stem erect, 2′–8′ high, viscid-pubescent, at least above, linear-bracted or with several 3-lobed leaves; flowers 1–8, corymbose, 4″–7″ broad, white; calyx-lobes ovate-oblong, obtuse or obtusish, much shorter than the obovate petals; capsule-tips divergent; base of the capsule adnate to the calyx.

On rocks, Quebec, Labrador and Newfoundland, west through arctic America to Alaska, south to Oregon and in the Rocky Mountains to Colorado. Also in arctic and alpine Europe and Siberia. Summer.

9. **Saxifraga Pennsylvánica** L. Pennsylvania or Swamp Saxifrage. (Fig. 1831.)

Saxifraga Pennsylvanica L. Sp. Pl. 399. 1753.

Saxifraga Forbesii Vasey, Am. Entom. & Bot. **2**: 288. 1870.

Scape stout, terete, viscid-pubescent, 1°–3½° high, bracted at the inflorescence. Leaves large, oval, ovate, obovate or oblanceolate, pubescent or glabrate, 4′–10′ long, 1½′–3′ wide, obtuse at the apex, narrowed at the base into a broad petiole, the margins denticulate or repand; cymes in an elongated open panicle; flowers greenish, regular, 1½″–2½″ broad; calyx-tube nearly free from the ovary, its lobes ovate, obtusish, reflexed, one-half shorter than the lanceolate or linear-lanceolate petals; filaments subulate or filiform; follicles ovoid, their tips divergent when mature.

In swamps and on wet banks, Maine to southern Ontario and Minnesota, south to Virginia, Iowa and Missouri. May.

10. Saxifraga micranthidifòlia (Haw.) B.S.P. Lettuce Saxifrage. (Fig. 1832.)

Robertsonia micranthidifolia Haw. Syn. Pl. Succ. 322. 1812.
Saxifraga erosa Pursh, Fl. Am. Sept. 311. 1814.
Saxifraga micranthidifolia B.S.P. Prel. Cat. N. Y. 17. 1888.

Scape rather slender, more or less viscid, 1°–3° high, bracted above. Leaves oblanceolate or oval, sometimes 1° long, obtuse at the apex, tapering downward into a long margined petiole, coarsely and sharply dentate; panicle loose, elongated; flowers white, regular, 2″–3″ broad; calyx-lobes reflexed, slightly shorter than the oval or oblong obtuse petals; calyx-tube free from the ovary; filaments club-shaped; follicles lanceolate, sharp-pointed, 2″–3″ long, their tips at length divergent.

In cold brooks, Bethlehem, Pa., south along the mountains to North Carolina. Ascends to 5500 ft. in North Carolina. May-June.

11. Saxifraga Virginiénsis Michx. Early Saxifrage. (Fig. 1833.)

Saxifraga Virginiensis Michx. Fl. Bor. Am. 1: 269. 1803.

Scape viscid-pubescent, 4′–12′ high, naked, or with a few bracts at the base of the pedicels. Leaves obovate, or oval with a spatulate base, narrowed into a margined petiole, dentate or crenate, obtuse or acutish at the apex, 1′–3′ long or longer; inflorescence cymose, at length loose and paniculate with the lower peduncles elongated; flowers white, regular, 2″–3″ broad; calyx-lobes erect, triangular or triangular-ovate much shorter than the oblong-spatulate, obtuse petals; ovary nearly free from the calyx; carpels nearly separate, the follicles at length widely divergent, often purplish.

In dry or rocky woodlands, New Brunswick to Minnesota, south to Georgia and Tennessee. Ascends to 3500 ft. in Virginia. March–May. Forms with 15 stamens occur on New York Island, and with green petals in Essex Co., Mass.

12. Saxifraga nivàlis L. Clustered Alpine Saxifrage. (Fig. 1834.)

Saxifraga nivalis L. Sp. Pl. 401. 1753.

Resembling the preceding species but commonly lower, seldom over 6′ high. Scape viscid, naked, or bracted at the base of the capitate sometimes branched inflorescence; leaves ovate or oval, narrowed into a margined petiole, thicker; flowe. vhite, 3″–5″ broad, in a compact cluster; calyx-lobes ovate or oblong, spreading, obtuse, about one-half the length of the oblong or oblong-ovate petals; ovary half-inferior; follicles deep purple, divergent.

Labrador and arctic America, south in the Rocky Mountains to Arizona. Also in northern and alpine Europe and Siberia. Summer. Said to flower beneath the snow.

13. Saxifraga comòsa (Poir.) Britton. Foliose Saxifrage. (Fig. 1835.)

Saxifraga stellaris var. *comosa* Poir. in Lam. Encycl. **6**: 680. 1804.
Saxifraga foliolosa R. Br. in Parry's Voy. 275. 1824.
Saxifraga comosa Britton, Mem. Torr. Club, **5**: 178. 1894.

Scape slender, slightly viscid, 2′–6′ high. Leaves oblanceolate, cuneate at the base, dentate and mostly obtuse at the apex, 4″–9″ long; flowers few, white, regular, many or sometimes all of them replaced by little tufts of leaves; calyx nearly free from the ovary, its lobes reflexed, much shorter than the sagittate obtusish petals which are narrowed into a claw, or sometimes cordate at the base.

In rocky places, Mt. Katahdin, Maine; Labrador and arctic America, Mt. Evans, Colo. Also in northeastern Asia and northern Europe. Summer.

14. Saxifraga stellàris L. Star or Starry Saxifrage. (Fig. 1836.)

Saxifraga stellaris L. Sp. Pl. 400. 1753.

Scape naked below, bracted at the inflorescence, glabrous or slightly viscid, 4′–12′ high. Leaves oblong, oblanceolate or obovate, sharply and coarsely dentate, tapering into a broad petiole, ½′–2′ long; flowers loosely cymose-paniculate, regular, about 5″ broad; petals white, yellow-spotted at the base; calyx nearly free from the ovary, its lobes reflexed, lanceolate, obtusish, about one-half the length of the oblong acutish petals, which are narrowed into a short claw; capsule 2″–3″ long, its tips acuminate, at length somewhat divergent.

In rocky places, reported from Labrador and Greenland. Also in arctic and alpine Europe and Asia. Summer.

15. Saxifraga Grayàna Britton. Gray's Saxifrage. (Fig. 1837.)

Saxifraga Caroliniana A. Gray, Mem. Am. Acad. **3**: 39. 1846. Not Schleich. 1821.
Saxifraga Grayana Britton, Mem. Torr. Club, **5**: 178. 1894.

Glandular-pilose all over, scapose from a corm-like rootstock, scape 6′–18′ tall. Basal leaves clustered, oblong, oval or nearly orbicular, 1′–5′ long, crenate-dentate, narrowed into margined petioles, mostly shorter than the blade and dilated at the base; inflorescence cymose-paniculate, ample; bracts spatulate or lanceolate; flowers white, 4″–5″ broad; calyx-tube adnate to the ovary, its segments ovate-oblong, reflexed, obtuse; petals ovate or oblong-ovate, obtuse, 2-spotted, narrowed into a slender claw; filaments club-shaped; follicles oblong, 2″–3″ long, united only at the base, diverging; styles subulate; seeds papillose in lines.

In rocky situations, mountains of Virginia and North Carolina. June–July.

16. Saxifraga Michaùxii Britton. Michaux's Saxifrage. (Fig. 1838.)

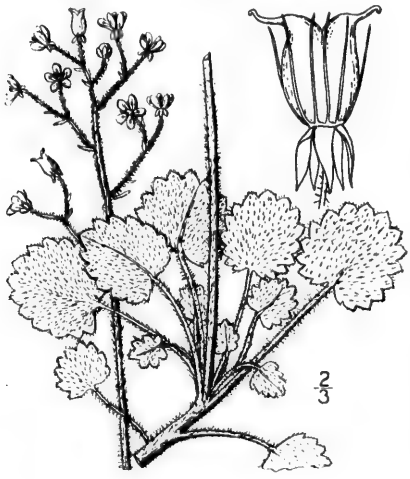
Saxifraga leucanthemifolia Michx. Fl. Bor Am. **1**: 268. 1803. Not LePeyr. 1795–1801.

Hexaphoma petiolaris Raf. Fl. Tell. **2**: 67. 1836. Not *S. petiolaris* R. Br. 1819.

Saxifraga Michauxii Britton, Mem Torr. Club, **4**: 118. 1894.

Erect, viscid-pubescent, 6′–20′ high. Basal leaves clustered, oblanceolate or oblong, acute or obtuse at the apex, 3′–7′ long, narrowed into a margined petiole, coarsely and deeply dentate; flowering stem naked below, leafy-bracted above; inflorescence widely paniculate; flowers 2″–3″ broad, irregular; petals clawed, white, the 3 larger ones sagittate or truncate and usually with a pair of yellowish spots at the base, the other 2 spatulate and unspotted, narrowed at the base; calyx-tube free from the ovary, its lobes reflexed; follicles lanceolate, sharp-pointed, little divaricate, about 2½″ long.

In dry rocky places, mountain summits of Virginia to Georgia. May–Sept.



17. Saxifraga Gèum L. Kidney-leaved Saxifrage. (Fig. 1839.)

Saxifraga Geum L. Sp. Pl. 401. 1753.

Densely glandular-pubescent, scapose, scape erect, 3′–10′ high. Leaves all clustered at the base, cordate, kidney-shaped or orbicular, ½′–1′ wide, coarsely crenate all around, borne on stout densely pubescent petioles 1′–2½′ long; inflorescence terminal, paniculate; bracts small, linear, obtuse; branches of the panicle ascending, 2–6-flowered; flowers 2″–3″ broad; petals white, oblong or ovate-oblong, with a yellow spot at the base and several smaller purplish spots at the middle; calyx-lobes lanceolate or ovate-lanceolate, reflexed; capsule oblong, its beaks slightly divergent.

Newfoundland and in the mountainous parts of Europe. June–July.

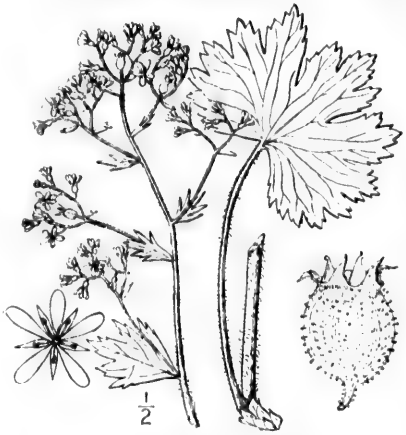
3. THÉROFON Raf. New Fl. N. A. **4**: 66. 1836.

[Boykinia Nutt. Journ. Acad. Phila. **7**: 113. 1834. Not Raf.]

Glandular-pubescent perennial herbs, with alternate petioled orbicular or reniform leaves, and small white perfect flowers in branching panicles. Calyx-tube top-shaped or subglobose, adnate to the ovary, its limb 5-lobed. Petals 5, deciduous, inserted on the calyx-tube. Filaments short. Ovary 2-celled (rarely 3-celled); styles 2, rarely 3. Capsule 2-celled, the beaks of the carpels divergent. Seeds numerous, the testa shining, minutely punctate. [Greek, beast-killing; an old name of aconite.]

About 5 species, natives of the southern Alleghanies and the mountains of western North America.

1. Therofon aconitifòlium (Nutt.) Millsp. Aconite Saxifrage. (Fig. 1840.)



Boykinia aconitifolia Nutt. Journ. Acad. Phil. 7: 113. 1834.
Therofon napelloides Raf. New Fl. 4: 66. 1836.
Saxifraga aconitifolia Field. Sert. Pl. *pl. 57.* 1844.
Therofon aconitifolium Millsp. Bull. West Va. Agric. Exp. Sta. 2: 361. 1892.

Stem rather stout, erect, 1°–2° high. Lower and basal leaves long-petioled, reniform-orbicular, cordate or truncate at the base, slightly scabrous above, glabrous or with a few scale-like hairs along the veins beneath, palmately 5–7-lobed, the lobes obovate or oval, sharply incised-serrate; upper leaves short-petioled; bracts of the inflorescence foliaceous, incised; cymes panicled; pedicels and calyx viscid; flowers white, about 2″ broad; calyx-lobes lanceolate, erect; petals oblanceolate, spatulate at base; capsule adnate to the calyx-tube, only its divergent beaks free.

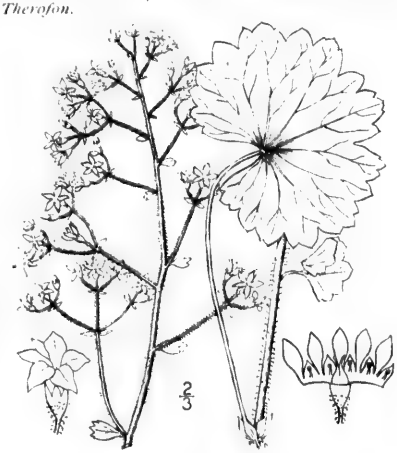
In woods, mountains of southwestern Virginia to North Carolina, Tennessee and Georgia. July.

4. SULLIVÁNTIA T. & G. Am. Journ. Sci. 42: 22. 1842.

Slender perennial herbs, with mainly basal long-petioled reniform-orbicular crenate or slightly lobed leaves, and small white cymose-paniculate flowers. Calyx-tube campanulate, adnate to the base of the ovary, its limb 5-lobed, the lobes erect. Petals 5, spatulate, marcescent. Stamens 5, inserted at the base of the calyx-lobes. Filaments short. Ovary 2-celled, 2-beaked, ripening into a 2-beaked capsule. Styles 2. Ovules ∞. Seeds winged on both sides. [Named in honor of William Starling Sullivant, 1803–1873, American botanist.]

Two known species, the following of eastern North America, the other of the western States. The genus is hardly sufficiently distinct from *Therofon*.

1. Sullivantia Sullivántii (T. & G.) Britton. Sullivantia. (Fig. 1841.)



Saxifraga (?) *Sullivantii* T. & G. Fl. N. A. 1: 575. 1840.
Sullivantia Ohionis T. & G. Am. Journ. Sci. 42: 22. 1842.

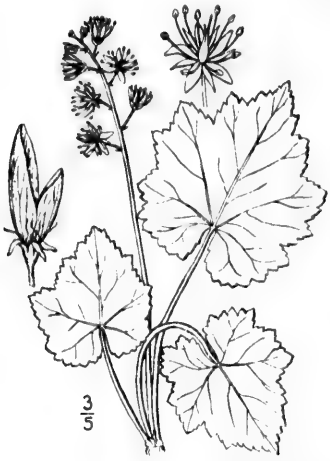
Stem scapose, nearly leafless, weak, reclined, slightly glandular-pubescent, 6′–15′ long. Leaves long-petioled, 1′–3′ wide, and wider than long, reniform-cordate at the base, crenate-dentate or somewhat lobed, sparingly pubescent or glabrous; panicle ample, sometimes leafy-bracted, loose, glandular; pedicels slender, recurved in fruit; flowers white, about 2″ broad; calyx-lobes ovate, acutish; petals entire, exceeding the stamens.

On cliffs, Ohio to Minnesota, Wisconsin and Iowa. June.

5. TIARÉLLA L. Sp. Pl. 405. 1753.

Perennial slender erect herbs, with the leaves mainly basal, long-petioled, lobed or 3-foliolate, small stipules adnate to the petiole, and white pedicelled racemose or paniculate flowers. Calyx-tube campanulate, nearly or quite free from the base of the ovary, its limb 5-lobed. Petals 5, clawed. Stamens 10; filaments elongated. Ovary 1-celled; styles 2; ovules ∞. Capsule membranous, 1-celled, 2-valved, the valves usually unequal. Seeds usually few, ovoid or globose, smooth, not winged. [Diminutive of *tiara*, from the form of capsule.]

About 6 species, natives of North America, Japan and the Himalayas. Besides the following, 3 others occur in the western parts of North America.



1. Tiarella cordifòlia L. Coolwort. False Mitrewort. (Fig. 1842.)

Tiarella cordifolia L. Sp. Pl. 405. 1753.

Scape 6′–12′ high, slender, pubescent. Leaves long-petioled, broadly ovate, or nearly orbicular, cordate at the base, 3–7-lobed, obtuse or acutish at the apex, 2′–4′ long, crenate or dentate all around, pubescent with scattered hairs above, glabrate or downy along the veins beneath; inflorescence simply racemose or the lowest pedicels sometimes branched, glandular-puberulent; flowers white, about 3″ broad; petals oblong, entire or slightly dentate, clawed, somewhat exceeding the white calyx-lobes; capsule reflexed, about 3″ long, its valves very unequal.

In rich, moist woods, Nova Scotia to Ontario and Minnesota, south, especially along the mountains, to Georgia, Indiana and Michigan. Ascends to 5600 ft. in Virginia. April–May.

6. HEÙCHERA L. Sp. Pl. 226. 1753.

Erect or ascending perennial herbs, with mainly basal long-petioled ovate or orbicular leaves, and small paniculate or racemose, white green or purple flowers, on naked or leafy-bracted scapes. Calyx-tube campanulate, often oblique, adnate to the base of the ovary, 5-lobed. Petals small, spatulate, often shorter than the calyx-lobes, entire, inserted on the throat of the calyx. Stamens 5, inserted with the petals. Ovary 1-celled; styles 2, slender; Ovules ∞. Capsule 2-valved, 2-beaked. Seeds minutely hispid or muricate. [Named for Johann Heinrich von Heucher, 1677–1747, a German botanist.]

About 21 species, natives of North America and Mexico. Besides the following, about 13 others occur in the western parts of North America.

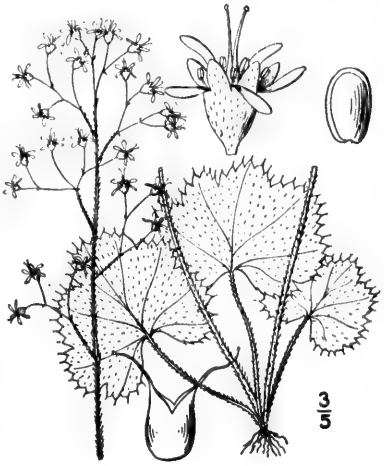
Flowering calyx 1″–1½″ long.	
Leaves thin, reniform, very obtusely lobed.	1. *H. Rugelii.*
Leaves firm, orbicular-ovate, acutely lobed.	2. *H. villosa.*
Flowering calyx 1½″–3″ long.	3. *H. Americana* ..
Flowering calyx 3″–5″ long.	
Panicle loose.	4. *H. pubescens.*
Panicle narrow, strict.	5. *H. hispida.*

1. Heuchera Rugèlii Shuttlw. Rugel's Heuchera. (Fig. 1843.)

Heuchera Rugelii Shuttlw.; Kunze, Linnaea, 20: 43. 1847.

Stems slender, 6′–24′ long, weak, glandular-hirsute or villous, leafless or bearing a few leaves below. Basal leaves with long slender glandular-villous petioles, broadly reniform, 2′–5′ wide, cordate at the base, with 7–9 broad rounded or rarely pointed lobes, crenately toothed, the teeth mucronate; inflorescence very loosely paniculate; flowering calyx regular, campanulate, about 1″ long; petals linear-spatulate, 2–3 times as long as the calyx-lobes; stamens somewhat exserted.

Shaded cliffs, Missouri and Illinois to western North Carolina. July–Sept.

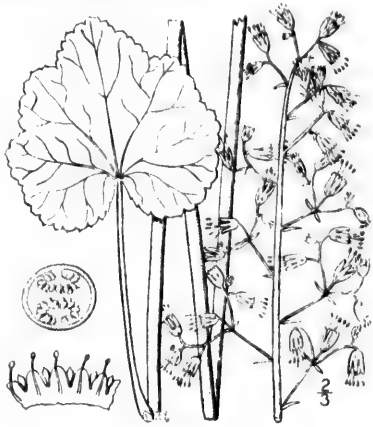


2. Heuchera villòsa Michx. Hairy Heuchera. (Fig. 1844.)

Heuchera villosa Michx. Fl. Bor. Am. 1: 172. 1803.

Stem erect, leafless, or rarely bearing a few small leaves below, generally villous-pubescent with brownish hairs, as are also the long petioles and the veins on the lower surfaces of the leaves. Basal leaves 3′–5′ wide, orbicular or sometimes longer than broad, sharply or obtusely and deeply 7–9-lobed, the lobes dentate or serrate; flowering calyx 1″–1½″ long, campanulate, regular; petals linear-spatulate, white or nearly so, about twice as long as the calyx-lobes; stamens much exserted.

In rocky places, Virginia and West Virginia to Georgia and Tennessee. June–Sept. Called also American Sanicle.



3. Heuchera Americàna L. Alum-root. (Fig. 1845.)

Heuchera Americana L. Sp. Pl. 226. 1753.

Stem rather stout, 2°–3° high, leafless or with a few small leaves, more or less glandular-hirsute. Basal leaves long-petioled, 3′–4′ wide, with 7–9 rounded crenate-dentate lobes, the older ones glabrous, or with scattered hairs on the upper surface; flowering calyx broadly campanulate, nearly regular, 1½″–3″ long; petals very small, greenish, usually not exceeding the calyx-lobes, stamens much exserted; anthers orange.

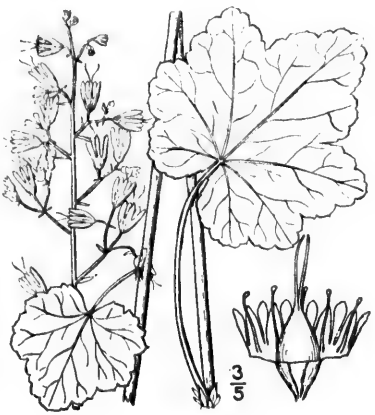
In dry or rocky woods, Ontario to Connecticut, west to Minnesota, south to Alabama and Louisiana. Ascends to 3000 ft. in Virginia. May–Aug.

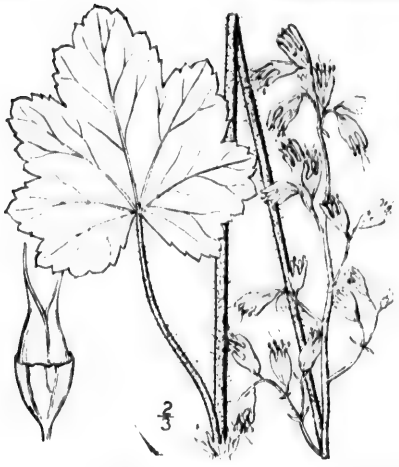
4. Heuchera pubéscens Pursh. Downy Heuchera. (Fig. 1846.)

H. pubescens Pursh, Fl. Am. Sept. 187. 1814.

Stems rather stout, 1°–3° high, densely glandular-pubescent, at least above, usually bearing 1 or 2 small leaves. Basal leaves slender-petioled, broadly ovate or orbicular, cordate, 2′–4′ wide, 5–7-lobed, the lobes rounded or acute, crenate or dentate; panicle loose; flowering calyx oblong-campanulate, somewhat oblique, 3″–4″ long, minutely glandular, its lobes usually unequal; petals broadly spatulate, purplish, slightly exceeding the calyx-lobes; stamens scarcely or slightly exserted.

In rich woods, mountains of Pennsylvania to Kentucky and North Carolina. Ascends to 4000 ft. in North Carolina. May–June.





5. Heuchera hispida Pursh.
Rough Heuchera.
(Fig. 1847.)

Heuchera hispida Pursh, Fl. Am. Sept. 188. 1814.

Heuchera Richardsonii R. Br. Frankl. Journ. 766. *pl. 29.* 1823.

Stem 2°–4° tall, hirsutely-pubescent or rarely nearly glabrous, usually leafless. Leaves 2′–3′ wide, on long and slender petioles, broadly ovate-orbicular, with 5–9 shallow rounded dentate lobes; panicle strict, narrow; flowering calyx campanulate, very oblique, 3″–5″ long, its lobes unequal; petals spatulate, slightly exceeding the calyx-lobes; stamens exserted.

In woods, Virginia to western Ontario, west to Kansas, Manitoba and the Northwest Territory, south in the Rocky Mountains to Montana and Idaho. May–June.

Heuchera hispida hirsuticaulis Wheelock, Bull. Torr. Club, 17: 199. 1890.

Very hirsute with white spreading hairs; flowering calyx slightly oblique, about 2″ long; stamens much exserted. Probably a distinct species. On rocks, Missouri and Indiana.

7. MITÉLLA L. Sp. Pl. 406. 1753.

Erect perennial herbs, with long-petioled ovate or orbicular basal leaves, naked or 2-leaved scapes, and small white or greenish flowers in elongated spiciform racemes. Calyx-tube campanulate or hemispheric, adnate to the base of the ovary, its limb 5-lobed. Petals 5, 3-cleft or pinnatifid. Stamens 10 (sometimes 5); filaments short. Ovary globose, 1-celled; styles 2, short; ovules ∞. Capsule 1-celled, 2-valved at the apex, many-seeded. Seeds smooth, shining. [Diminutive of *mitra*, a cap, from the form of the young pod.]

About 7 species, natives of North America and eastern Asia. Besides the following, about 4 others occur on the Pacific Coast.

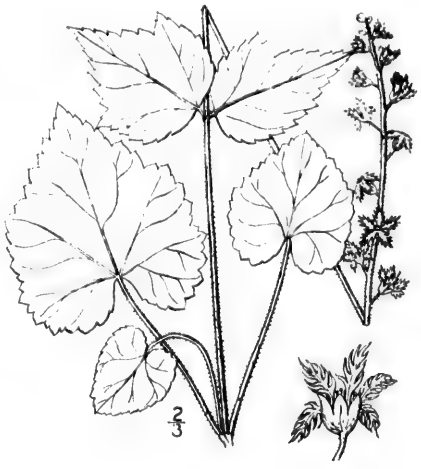
Basal leaves ovate; scape with 2 opposite leaves. 1. *M. diphylla.*
Basal leaves reniform; scape naked or 1-leaved near the base. 2. *M. nuda.*

1. Mitella diphýlla L. Two-leaved Bishop's Cap, or Mitrewort. (Fig. 1848.)

Mitella diphylla L. Sp. Pl. 406. 1753.

Scape 10′–18′ high, pubescent, bearing a pair of opposite nearly or quite sessile leaves near its middle. Basal leaves broadly ovate, cordate at the base, acute or acuminate at the apex, 3–5-lobed, dentate, scabrous and with scattered hairs on both sides, 1′–2′ long; leaves of the scape similar, usually smaller; spiciform raceme erect, 3′–8′ long, the flowers distant; calyx-lobes and petals white; capsule flattish, broad, dehiscent above, the valves spreading.

In rich woods, Quebec to Minnesota, North Carolina and Missouri. Ascends to 2600 ft. in Virginia. A third leaf is rarely borne on the scape at the base of the inflorescence. April–May.

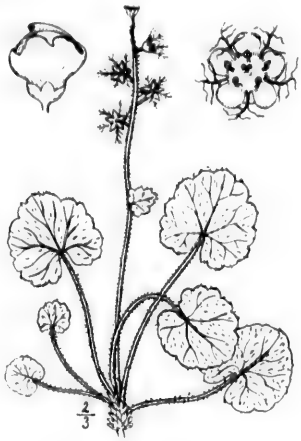


2. Mitella nùda L. Stoloniferous or Naked Bishop's Cap or Mitrewort. (Fig. 1849.)

Mitella nuda L. Sp. Pl. 408. 1753.

Stem usually stoloniferous, scape erect, very slender, pubescent, 3′–7′ high. Basal leaves reniform-orbicular, obtuse, cordate at the base, crenate or doubly crenate, 1′–1½′ wide, pubescent with scattered hairs on both sides; stem-leaves usually none; flowers pedicelled, greenish, about 2″ broad; capsule similar to that of the preceding species.

In cold woods and peat-bogs, Newfoundland and Labrador to the Pacific coast, south to New England, Pennsylvania, Michigan, and in the Canadian Rocky Mountains. Ascends to 3000 ft. in the Adirondacks. Also in northeastern Asia. April-June, or blooming again in the autumn.

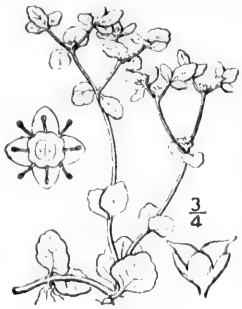


8. CHRYSOSPLÈNIUM L. Sp. Pl. 398. 1753.

Low decumbent or erect somewhat succulent mainly semi-aquatic herbs, with petioled opposite or alternate crenate leaves, with no stipules. Flowers minute, greenish, axillary or terminal, solitary or clustered, perfect. Calyx-tube urn-shaped or obconic, adnate to the ovary, its limb 4–5-lobed. Petals none. Stamens 8–10 (rarely 4–5), inserted on the margin of a disk; filaments short. Ovary 1-celled, flattish, 2-lobed; styles 2, short, recurved; ovules ∞. Capsule membranous, short, inversely cordate or 2-lobed, 2-valved above, few or many-seeded. Seed-coat muricate or pilose. [Greek, golden spleen, from some reputed medicinal quality.]

About 15 species, natives of the north temperate zone and southern South America. Besides the following, 2 others occur in northwestern America.

Lower leaves opposite; flowers mostly solitary. 1. *C. Americanum*.
Leaves all alternate; flowers corymbose. 2. *C. alternifolium*.



1. Chrysosplenium Americànum Schwein. Golden Saxifrage. Water Carpet. (Fig. 1850.)

Chrysosplenium oppositifolium Walt. Fl. Car. 140. 1788. Not L.
C. Americanum Schwein.; Hook. Fl. Bor. Am. 1: 242. 1832.

Stems slender, decumbent, forked above, glabrous or very nearly so, 3′–8′ long. Lower leaves opposite, the upper often alternate, broadly ovate, orbicular or somewhat reniform, obtuse or truncate at the base, rounded at the apex, crenate or obscurely lobed, 2″–10″ wide; flowers sessile, axillary, usually solitary, about 1″ broad; calyx-lobes commonly 4, yellowish, or purplish within; stamens commonly 8; anthers orange-red.

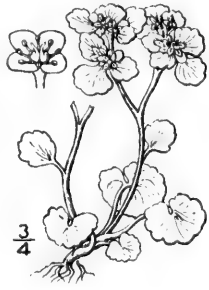
In wet, shaded places, Nova Scotia to the Saskatchewan region, south, along the mountains to Georgia, and to Ohio, Michigan and Minnesota. March-June.

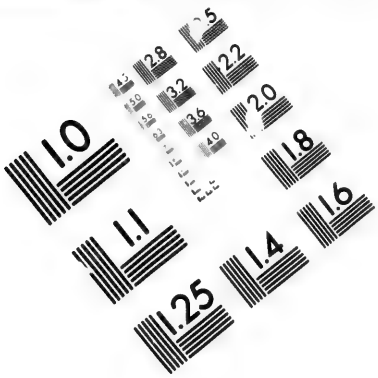
2. Chrysosplenium alternifòlium L. Alternate-leaved Golden Saxifrage. (Fig. 1851.)

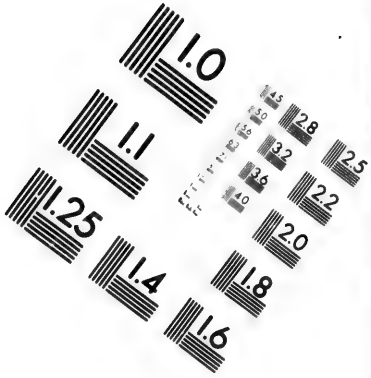
Chrysosplenium alternifolium L. Sp. Pl. 398. 1753.

Flowering stems erect, glabrous or pubescent, 2′–6′ high, branched above. Leaves all alternate, the basal ones long-petioled, reniform, or cordate, often pubescent on the upper surface, 3″–18″ wide, or crenate with 5–11 rather broad lobes; flowers mainly terminal, corymbose; calyx-lobes commonly 4, orange-yellow within; stamens usually 8.

Decorah, Iowa (according to S. Watson), and in arctic America, south in the Rocky Mountains to Colorado and to British Columbia. Also in northern Europe and Asia. May-June.







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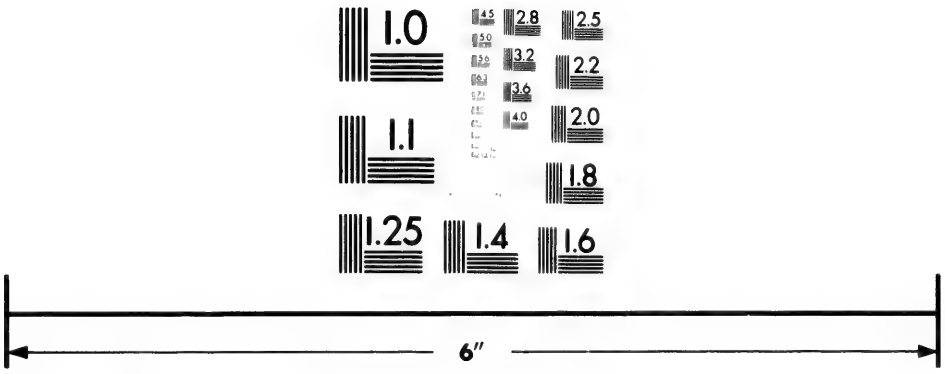

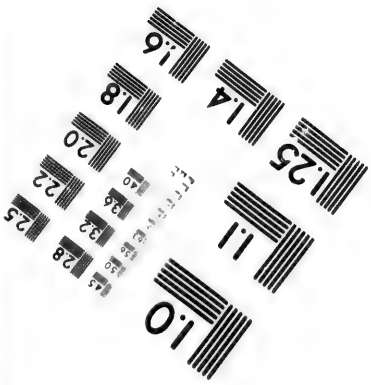

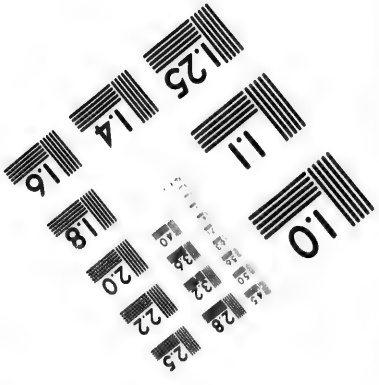

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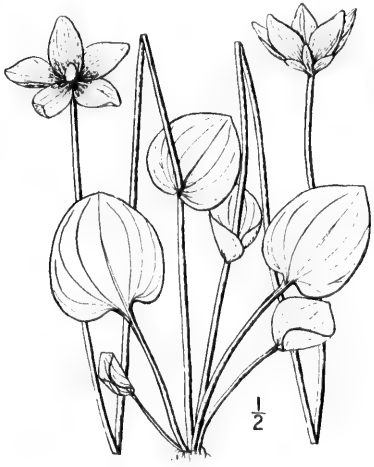
9. PARNÁSSIA L. Sp. Pl. 273. 1753.

Glabrous scapose herbs, with basal petioled entire leaves, usually with a single sessile leaf on the scape, and solitary terminal white or pale yellow flowers. Calyx 5-lobed nearly to the base, its short tube free from or adnate to the ovary. Petals 5, spreading, marcescent. Fertile stamens 5, alternate with the petals. Staminodia (imperfect stamens) generally numerous, borne in clusters at the base of each petal. Ovary 1-celled; style very short or none; stigmas usually 4; ovules ∞. Capsule 1-celled, with 4 placentae projecting within, 4-valved. Seeds numerous. Seed-coat winged. [From the Greek mount; the plant called Grass of Parnassus by Dioscorides.]

About 12 species, natives of the north temperate and arctic zones. Besides the following, another occurs in northwestern America.

Petals sessile; leaves ovate, oval, orbicular or cordate.
- Staminodia 3–5 at the base of each petal.
  - Flower 9″–18″ broad; petals much exceeding the calyx-lobes.
    - Staminodia not longer than the stamens, stout. — 1. *P. Caroliniana.*
    - Staminodia longer than the stamens, slender. — 2. *P. grandifolia.*
  - Flower 4″–5″ broad; petals equalling the calyx-lobes. — 3. *P. Kotzebuei.*
- Staminodia 7–15 at the base of each petal, slender.
  - Flower 1′ broad; leaves cordate at base. — 4. *P. palustris.*
  - Flower 4″–5″ broad; leaves narrowed at base. — 5. *P. parviflora.*

Petals clawed; leaves reniform; staminodia 3 at each petal. — 6. *P. asarifolia.*



1. Parnassia Caroliniàna Michx. Carolina Grass-of-Parnassus. (Fig. 1852.)

Parnassia Caroliniana Michx. Fl. Bor. Am. 1: 184. 1803.

Scape 8′–24′ high, with a nearly sessile ovate clasping leaf below the middle. Basal leaves long-petioled, ovate, broadly oval or orbicular, obtuse at the apex, rounded or sometimes cordate-reniform at the base, or decurrent into the petiole, 1′–2′ long; flower 9″–18″ broad; calyx-lobes ovate-oblong, obtuse, much shorter than the sessile broadly oval white greenish-veined petals; staminodia generally 3 in each set, stout; capsule 4″–5″ long.

In swamps and low meadows, New Brunswick to Manitoba, south to Virginia, Illinois and Iowa. June–Sept.

2. Parnassia grandifòlia DC. Large-leaved Grass-of-Parnassus. (Fig. 1853.)

Parnassia grandifolia DC. Prodr. 1: 320. 1824.

Similar to the preceding species, the scape bearing an ovate clasping leaf at the middle or much below it. Basal leaves as in *P. Caroliniana*, but often larger and narrowed at the base; flower 1′–2′ broad; calyx-lobes shorter than the sessile white petals; staminodia 3–5 in each set, slender or almost filiform, exceeding the anther-bearing stamens.

In moist soil, southwestern Virginia to Florida, Missouri and Louisiana. Ascends to 2200 ft. in Virginia. July–Sept.

3. Parnassia Kotzebùei C. & S. Kotzebue's Grass-of-Parnassus. (Fig. 1854.)

Parnassia Kotzebuei C. & S. Linnaea, 1: 549. 1826.

Scape slender, 3′–7′ high, leafless, or sometimes with a single sessile oval leaf near the base. Basal leaves short-petioled, membranous, ovate or oval, narrowed or sometimes cordate at the base, 3″–12″ long; flower 4″–5″ broad, calyx-lobes oblong, equalling or slightly shorter than the elliptic white 3–5-veined sessile petals; staminodia 3–5 at the base of each petal, rather slender.

Mt. Albert, Quebec; Labrador, arctic America to Alaska and in the Canadian Rocky Mountains. Perhaps not distinct from *P. parviflora*. Summer.

4. Parnassia palústris L. Marsh or Northern Grass-of-Parnassus. (Fig. 1855.)

Parnassia palustris L. Sp. Pl. 273. 1753.

Scape slender, 3′–12′ high, bearing a clasping ovate leaf below the middle, or rarely leafless. Basal leaves slender-petioled, ovate, obtuse at the apex, usually cordate at the base, 9″–18″ long; flower 6″–12″ broad; calyx ¼–½ shorter than the elliptic few-veined sessile petals; staminodia 9–15 at the base of each petal, slender.

In wet places, Newfoundland, Quebec and Labrador to the Canadian Rocky Mountains and Alaska, south to Minnesota, Michigan, and in the Rocky Mountains to Wyoming. Also in Europe and Asia. July–Sept.

5. Parnassia parviflòra DC. Small-flowered Grass-of-Parnassus. (Fig. 1856.)

Parnassia parviflora DC. Prodr. 1: 320. 1824.

Scape 4′–12′ high, very slender, usually bearing a clasping oval leaf at about the middle. Basal leaves petioled, oval or ovate, narrowed at the base, not cordate, 6″–12″ long; flower 4″–8″ broad; sepals equalling or somewhat shorter than the elliptic sessile petals; staminodia 5–7 at the base of each petal, slender.

In wet places, Quebec to Labrador and the Pacific Coast, south to Minnesota, Michigan, and in the Rocky Mountains to Wyoming. July–Sept.

6. Parnassia asarifòlia Vent. Kidney-leaved Grass-of-Parnassus. (Fig. 1857.)

Parnassia asarifolia Vent. Jard. Malm. *pl.* 39. 1803.

Scape 10′–20′ high, bearing a clasping nearly orbicular leaf at about the middle. Basal leaves long-petioled, orbicular or much broader than long, rounded, broadly kidney-shaped at the base, often 2′–3′ wide; flower about 1′ broad; calyx-lobes oval, much shorter than the strongly veined elliptic petals, which are rather abruptly narrowed into a claw; staminodia 3 in each set, slender, about the length of the stamens.

In wet places, high mountains of Virginia and North Carolina. July–Sept.

10. HYDRÁNGEA L. Sp. Pl. 397. 1753.

Shrubs, or some Asiatic species small trees, with opposite simple petioled leaves and terminal corymbose flowers. Stipules none. Exterior flowers of the corymb often apetalous, slender-pedicelled, sterile, but with enlarged and very conspicuous calyx-lobes, or sometimes the whole corymb changed to these sterile flowers; fertile flowers small. Calyx-tube hemispheric or obconic, adnate to the ovary, 4-5-lobed. Petals 4–5. Stamens 8–10, inserted on the disk. Filaments filiform. Ovary 2–4-celled; styles 2–4, distinct, or united at the base; ovules ∞. Capsule membranous, usually 2-celled, ribbed, many-seeded, dehiscent at the bases of the styles. [Greek, water-vessel, from the shape of the capsule.]

About 35 species, natives of eastern North America, eastern Asia and the Himalayas, and South America. Besides the following, another occurs in the southeastern States.

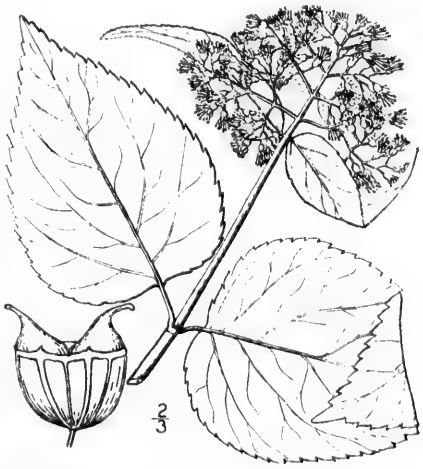
Leaves glabrous or somewhat pubescent beneath. 1. *H. arborescens.*
Leaves densely tomentose beneath. 2. *H. radiata.*

1. Hydrangea arboréscens L. Wild Hydrangea. (Fig. 1858.)

H. arborescens L. Sp. Pl. 397. 1753.
Hydrangea vulgaris Michx. Fl. Bor. Am. 1: 268. 1803.

A shrub, 4°–10° high, the young twigs pubescent or glabrate. Petioles slender, 1′–4′ long; leaves ovate, thin, 3′–6′ long, acute or often acuminate at the apex, rounded, cordate or rarely broadly cuneate at the base, sharply dentate, green both sides, glabrous above, sometimes pubescent beneath; cymes 2′–5′ broad; marginal sterile flowers usually few or none, but sometimes numerous, or forming the entire inflorescence.

On rocky stream or river banks, southern New York and New Jersey, very abundant in the valley of the Delaware, to Iowa, south to Florida and Missouri. Species variable. Ascends to 4200 ft. in North Carolina. June–July, sometimes blooming again in Sept.



Hydrangea arboréscens Kanawhàna Millsp. Bull. W. Va. Agric. Exp. Sta. 2: 363. 1891.
Leaves pale or somewhat glaucous beneath. West Virginia.

2. Hydrangea radiàta Walt. Downy Hydrangea. (Fig. 1859.)

Hydrangea radiata Walt. Fl. Car. 251. 1788.

Hydrangea nivea Michx. Fl. Bor. Am. 1: 268. 1803.

A shrub 6°–8° high, the twigs finely pubescent or glabrate. Leaves slender-petioled, ovate, rounded or cordate at the base, acute or acuminate at the apex, 3′–6′ long, thicker than those of the preceding species, green and nearly glabrous above, densely tomentose, sometimes silvery white beneath; marginal flowers, or at least some of them, sterile and conspicuous.

Missouri to Tennessee and North Carolina, south to Georgia. Our description perhaps includes two species. June–July.

11. DECUMÀRIA L. Sp. Pl. Ed. 2, 1663. 1763.

Woody climbing vines, with opposite petioled leaves, and terminal corymbose perfect flowers. Stipules none. Calyx-tube top-shaped, adnate to the ovary, its limb 7–10-toothed. Petals 7–10, narrow. Stamens 20–30, inserted on the disk; filaments subulate. Ovary 5–10-celled, 10–15-ribbed, its apex conic; style thick; stigma capitate, 5–10-lobed; ovules ∞. Capsule fragile, ribbed, opening between the ribs. Seeds numerous, the testa membranous, reticulated, produced into a club-shaped appendage. [Latin, *decem*, ten; the parts being often in 10's.]

A monotypic genus of southeastern North America.

1. Decumaria bàrbara L. Decumaria. (Fig. 1860.)

Decumaria barbara L. Sp. Pl. Ed. 2, 1663. 1763.

Glabrous, or the shoots pubescent, climbing by aerial rootlets to a height of several feet. Petioles ½′–1′ long; leaves ovate, acute or obtuse at the apex, rounded or narrowed at the base 2′–4′ long, entire or repand-denticulate, sometimes pubescent on the veins of the lower surface, glabrous and shining above; corymbs terminal, compound, 2′–3′ broad; flowers white, fragrant, 3″–4″ broad; calyx-teeth deciduous; capsule top-shaped, 2″–3″ high, tipped with the conic persistent style, opening between the ribs and remaining on the plant after the seeds fall away.

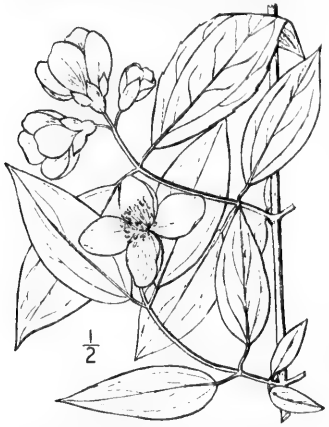
In swamps, southeastern Virginia to Florida, west to Louisiana. May–June.

12. PHILADÉLPHUS L. Sp. Pl. 470. 1753.

Shrubs, with opposite petioled simple deciduous leaves, and no stipules. Flowers large, terminal or axillary, corymbose, racemose or solitary, white or cream-colored. Calyx-tube top-shaped, adnate to the ovary, 4–5-lobed. Petals 4–5, convolute, rounded or obovate. Stamens 20–40, inserted on the disk; filaments linear. Ovary 3–5-celled; styles 3–5, filiform, distinct, or united at the base; ovules ∞. Capsule top-shaped, 3–5-celled, at length loculicidally dehiscent by 3–5 valves, many-seeded. Seeds oblong, the testa membranous, produced at each end. [Named after King Ptolemy Philadelphus.]

About 15 species, natives of North America, Mexico, Asia and central Europe. Besides the following, about 5 others occur in the southern and western parts of North America. Called Mock Orange from the orange-like blossoms of the various species. The common name Syringa is unfortunate, being the generic name of the Lilac.

Flowers inodorous, solitary or few.
Calyx-lobes about equalling the tube. 1. *P. inodorus.*
Calyx-lobes about twice as long as the tube. 2. *P. grandiflorus.*
Flowers racemose, numerous, fragrant. 3. *P. coronarius.*



1. Philadelphus inodòrus L. Scentless Syringa. (Fig. 1861.)

Philadelphus inodorus L. Sp. Pl. 470. 1803.

A shrub, 6°–8° high, glabrous or very nearly so throughout. Leaves ovate or oval, acute or acuminate at the apex, rounded or sometimes narrowed at the base, 2′–5′ long, strongly 3-nerved, serrate with small distant teeth, or entire; flowers white, inodorous, about 1′ broad, solitary or 2 or 3 together at the ends of short branches; calyx-lobes triangular-ovate, acute, about as long as the tube; capsule about 3″ high.

In thickets, Virginia to Alabama and Georgia, principally in the mountains. Escaped from cultivation in Pennsylvania. May.

2. Philadelphus grandiflòrus Willd. Large-flowered Syringa. (Fig. 1862.)

Philadelphus grandiflorus Willd. Enum. Hort. Berol. 511. 1809.

A shrub, 6°–10° high, resembling the preceding species and perhaps not specifically different. Leaves broadly ovate or oval, more or less pubescent, especially beneath, 3′–5′ long, acuminate at the apex, rounded or narrowed at the base, sharply dentate, 3-nerved; flowers 1–3 together at the ends of the branches, and sometimes also axillary to the upper leaves, white, inodorous, 1½′–2′ broad; calyx-lobes lanceolate, acuminate or acute, twice as long as the tube; capsule about 3″ high.

In low grounds, Virginia to Tennessee and Florida. April–May.

3. Philadelphus coronàrius L. Garden Syringa. Mock Orange. (Fig. 1863.)

Philadelphus coronarius L. Sp. Pl. 470. 1753.

A shrub 8°–10° high. Leaves short-petioled, oval, elliptic or ovate-elliptic, 2′–4′ long, glabrous above, pubescent beneath, acute or acuminate at the apex, rounded or narrowed at the base, denticulate with distant teeth, 3-nerved; flowers numerous, racemose at the ends of the branches, 1′–1½′ broad, creamy white, very fragrant; calyx-lobes ovate, acute, longer than the tube.

Escaped from gardens in Virginia and Ohio, and sparingly in the Middle and Eastern States. Native of central Europe. May–June.

13. ÌTEA L. Sp. Pl. 199. 1753.

Shrubs or small trees, with simple alternate petioled deciduous leaves, no stipules, and small white flowers in terminal narrow racemes. Calyx-tube obconic or campanulate, 5-lobed, its base adnate to the ovary. Petals 5, linear, their apices inflexed. Stamens 5, inserted on the disk. Ovary 2-celled; style slender; stigma 2-grooved in our species; ovules few or numerous. Capsule oblong or narrowly conic, 2-valved, several–many-seeded. Seeds narrow, flattish, the testa produced at each end. [Greek for willow, which its leaves resemble.]

About 5 species, natives of the eastern United States and Asia. The following is the only one known to occur in North America.

1. Itea Virginica L. Itea. Virginia Willow. (Fig. 1864.)

Itea Virginica L. Sp. Pl. 199. 1753.

A shrub 4°–10° high, the twigs and inflorescence finely pubescent. Leaves short-petioled, narrowly oval, oblanceolate or rarely obovate, 1′–3′ long, acute or acuminate at the apex, narrowed at the base, sharply serrulate, glabrous, or with a few hairs along the veins beneath; racemes terminal, dense, 2′–6′ long; flowers short-pedicelled; petals linear, erect or slightly spreading, about 2½″ long; capsule 2-grooved, 2″–3″ long, pubescent, narrow, tipped with the persistent at length 2-parted style.

In wet places, pine barrens of New Jersey, and eastern Pennsylvania to Florida, west to western North Carolina and Louisiana. May–June.

Family 40. GROSSULARIÀCEAE Dumort. Anal. Fam. 37. 1829.

GOOSEBERRY FAMILY.

Shrubs, with alternate often fascicled usually lobed petioled leaves, and racemose or subsolitary axillary or lateral flowers, the pedicels bracteolate. Calyx-tube ovoid, cylindric or hemispheric, adnate to the ovary, the limb 4–5-lobed, often colored. Petals 4–5, inserted on the throat of the calyx, small, scale-like, often included. Stamens 4–5, inserted with the petals, included or exserted. Ovary 1-celled; styles 2, distinct or united; ovules few or numerous. Berry globose or ovoid, pulpy, the calyx persistent on its summit. Seeds obscurely angled, their outer coat gelatinous, the inner crustaceous.

Only the following genus, having the characters of the family.

1. RÌBES L. Sp. Pl. 200. 1753.

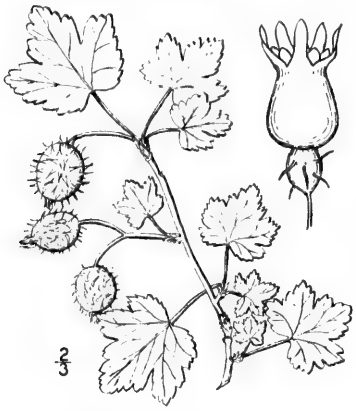
About 60 species, natives of the north temperate zone and the Andes of South America. Besides the following some 40 others occur in the western parts of North America.

Flowers solitary, or 2–4, axillary.
- Native plants of woods or swamps; spines mostly slender.
  - Calyx-lobes shorter than the tube; berries more or less spiny.
    - Calyx-tube ovoid-campanulate, green. — 1. *R. Cynosbati.*
    - Calyx-tube tubular, white. — 2. *R. setosum.*
  - Calyx-lobes exceeding the tube; berries glabrous.
    - Peduncles slender; stamens long-exserted. — 3. *R. gracile.*
    - Peduncles short; stamens included or little exserted.
      - Stamens not exceeding the oblong calyx-lobes. — 4. *R. oxyacanthoides.*
      - Stamens somewhat exceeding the linear calyx-lobes. — 5. *R. rotundifolium.*
  - Introduced, escaped from gardens; spines stout, usually 3 together. — 6. *R. Uva-crispa.*

Flowers racemose, small, axillary or lateral.
- Stems and berries bristly. — 7. *R. lacustre.*
- Stems entirely unarmed.
  - Berries red, glandular-bristly. — 8. *R. prostratum.*
  - Berries glabrous.
    - Racemes erect or ascending; fruit black. — 9. *R. Hudsonianum.*
    - Racemes pendulous.
      - Calyx-tube cylindric; fruit black. — 10. *R. floridum.*
      - Calyx-tube campanulate; fruit red. — 11. *R. rubrum.*
      - Calyx tubular; fruit red. — 12. *R. cereum.*

Flowers racemose; calyx-tube elongated, bright yellow. — 13. *R. aureum.*

1. **Ribes Cynósbati** L. Wild Gooseberry. Dogberry. (Fig. 1865.)

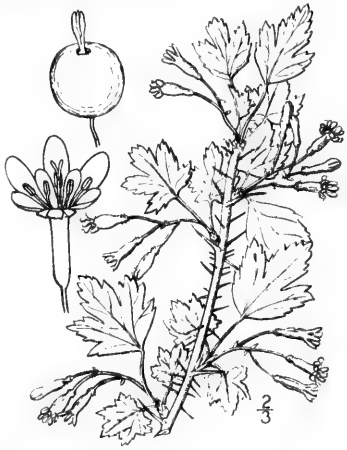


Ribes Cynosbati L. Sp. Pl. 202. 1753

Infra-axillary spines slender, solitary or sometimes 2–3 together, erect or spreading, 3″–6″ long, or often wanting. Prickles of the branches few and weak or none; petioles 6″–18″ long, slender, generally pubescent; leaflets nearly orbicular, 1′–2′ broad, somewhat pubescent, at least when young, truncate or cordate at the base, deeply 3–5-lobed, the lobes crenate-dentate or incised; peduncles and pedicels slender; flowers 1–3, green, 3″–4″ long; calyx-lobes oblong, shorter than the ovoid tube; stamens not exserted; berry 4″–6″ in diameter, with subulate prickles.

In rocky woods, New Brunswick, south, especially along the Alleghanies to North Carolina, west to Manitoba and Missouri. Accends to 5000 ft. in North Carolina. April-June.

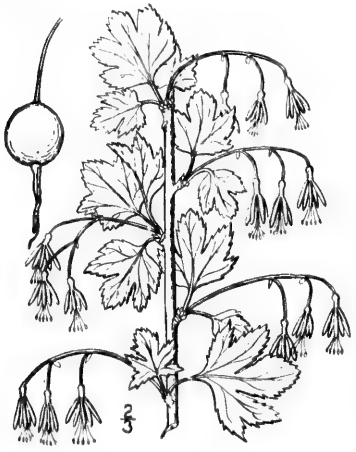
2. **Ribes setòsum** Lindl. Bristly Gooseberry. (Fig. 1866.)



Ribes setosum Lindl. Trans. Hort. Soc. 7: 243. 1830.

Infra-axillary spines 1–2 together, slender, 2″–3″ long, spreading, sometimes none. Bristles usually numerous, scattered; leaves slender-petioled, more or less pubescent, at least when young, 1′ in width or less, broadly ovate or orbicular, 3–5-lobed, the lobes incised-dentate; flowers 1–4, white, 3″–5″ long; calyx-tube cylindric, longer than the oblong lobes; stamens not exserted; fruit sparingly bristly, or often glabrous.

On lake shores, and in thickets, western Ontario and Manitoba to Montana, Nebraska and Wyoming. May.



3. **Ribes grácile** Michx. Missouri Gooseberry. (Fig. 1867.)

Ribes gracile Michx. Fl. Bor. Amer. 1: 111. 1803.

Spines slender, solitary, or 2–3 together, reddish, 3″–8″ long or more. Prickles generally few or none; leaves slender-petioled, somewhat pubescent when young, orbicular or broader, 9″–18″ wide, truncate, slightly cordate, or sometimes obtuse at the base, 3–5-lobed, the lobes rather blunt, dentate; pedicels very slender, 4″–6″ long; flowers white or greenish tinged, drooping, 6″–9″ long; calyx-tube narrow, shorter than the linear lobes; stamens connivent or parallel, much exserted; berry reddish-purple, 5″–6″ in diameter.

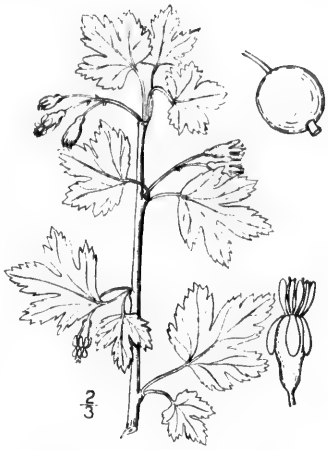
In dry or rocky soil, Minnesota, Michigan, Illinois and Pennsylvania to Tennessee and Texas. May.

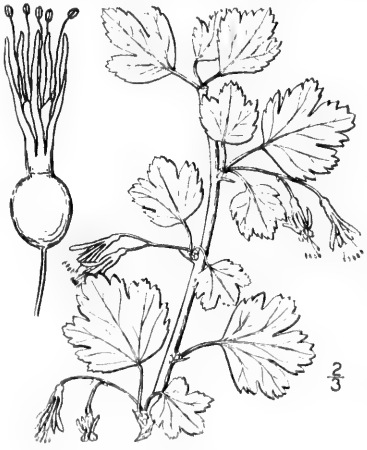
4. Ribes oxyacanthoides L. Hawthorn or Northern Gooseberry. (Fig. 1868.)

Ribes oxyacanthoides L. Sp. Pl. 201. 1753.
Ribes hirtellum Michx. Fl. Bor. Am. 1: 111. 1803.

Spines generally solitary, light colored, 3″–6″ long, sometimes none. Prickles scattered or wanting; leaves petioled, similar to those of the preceding species, the lobes obtuse or acute; petioles and lower leaf-surfaces commonly pubescent; peduncles short, commonly less than 6″ long; flowers 1–3, short-pedicelled, greenish-purple or white, about 3″–4″ long; calyx-lobes oblong; stamens short, not exserted; berry globose or globose-ovoid, glabrous, 4″–6″ in diameter, reddish-purple when ripe.

In wet woods and low grounds, Newfoundland to the Northwest Territory and British Columbia, south to New Jersey, Ohio, Michigan and in the Rocky Mountains to Utah and Colorado. May–July.





5. Ribes rotundifòlium Michx. Eastern Wild Gooseberry. (Fig. 1869.)

Ribes rotundifolium Michx. Fl. Bor. Am. 1: 110. 1803.

Closely resembling the preceding species, the spines commonly shorter, or often altogether wanting, and the prickles few or none. Leaves similar, pubescent, at least beneath, when young; peduncles rather short; flowers 1–3, greenish-purple, 3″–4″ long, pedicelled; calyx-lobes linear-oblong or somewhat spatulate; stamens exserted for about ¼ their length; berry globose, glabrous, usually not more than 4″ in diameter.

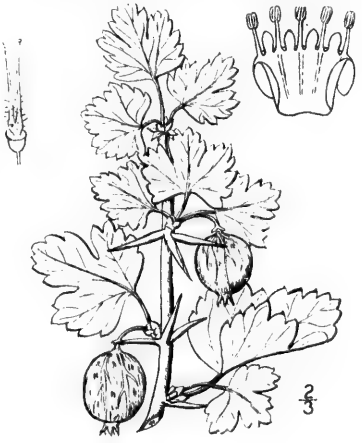
In rocky woods, western Massachusetts and southeastern New York to North Carolina, especially along the mountains. May–July.

6. Ribes Ùva-crìspa L. Garden Gooseberry. (Fig. 1870.)

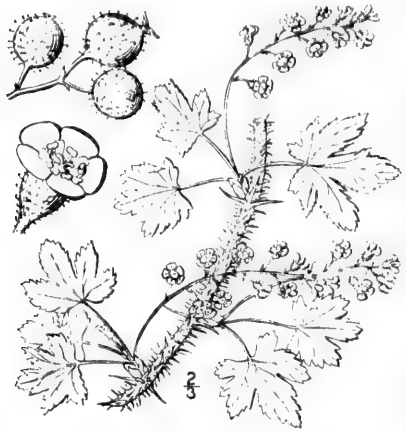
Ribes Uva-crispa L. Sp. Pl. 201. 1753.
Ribes Grossularia L. Sp. Pl. 201. 1753.

Spines stout, spreading or reflexed, usually 3 together but sometimes solitary or 2, apparently never entirely wanting. Prickles scattered or none; leaves rather short-petioled, orbicular or broader, pubescent, at least when young, seldom over 1′ wide, 3–5-lobed, the lobes obtuse and crenate-dentate; peduncles very short, 1-flowered or sometimes 2-flowered, usually pubescent; flowers green, about 3″ long; calyx-tube campanulate, its lobes oval; stamens somewhat exserted, or included; fruit globose-ovoid, glabrous, or with weak bristles, often 1′ long in cultivation.

Along roadsides in eastern New Jersey and southeastern New York, escaped from gardens. Native of Europe and Asia. Teaberry. May.



7. Ribes lacústre (Pers.) Poir. Swamp Gooseberry. (Fig. 1871.)



Ribes oxyacanthoides var. *lacustre* Pers. Syn. 1: 252. 1805.
Ribes lacustre Poir. in Lam. Encycl. Suppl. 2: 856. 1811.

Spines slender, weak, generally clustered. Branches usually densely bristly; petioles slender, more or less pubescent; leaves nearly orbicular, thin, pubescent along the veins beneath, deeply 5–7-lobed, 1′–2′ wide, the lobes obtuse or acutish, incised-dentate; flowers racemose, green, about 2″ long; pedicels slender, bracted at the base, about 2″ long; calyx-tube short, campanulate, its lobes short, broad, spreading; stamens very short, not exserted; berry about 2″ in diameter, reddish, covered with weak bristles.

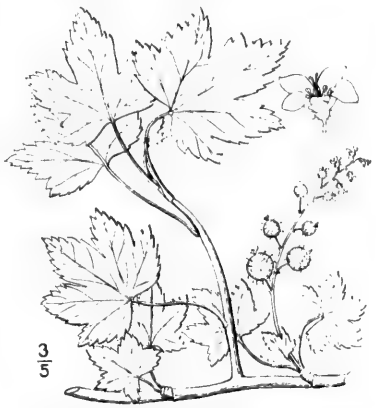
In swamps and wet woods, Newfoundland to Massachusetts, New York and Pennsylvania, west to Michigan, British Columbia and Washington. Intermediate between Gooseberries and Currants. May–June.

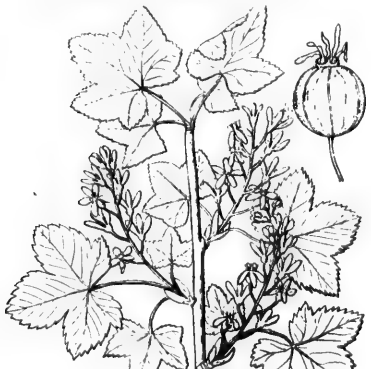
8. Ribes prostràtum L'Her. Fetid Currant. (Fig. 1872.)

R. prostratum L'Her. Stirp. Nov. 1: 3. *pl.* 2. 1784.

Branches decumbent or spreading, thornless and without prickles. Petioles slender, 1′–3′ long, pubescent or glabrous, the dilated base sometimes ciliate; leaves nearly orbicular, sharply and deeply 5–7-lobed, 1′–3′ wide, usually somewhat pubescent along the veins beneath, the lobes acute or acutish, dentate-serrate; flowers racemose, appearing from the same buds as the leaves, about 2½″ broad; pedicels 2″–2½″ long, glandular, bracted at the base; calyx broadly campanulate, its lobes short and broad; stamens short, not exserted; fruit light red, glandular-bristly, about 2″ in diameter.

In cold wet places, Labrador to British Columbia and the Northwest Territory, south, especially along the mountains, to North Carolina, Michigan, and in the Rocky Mountains to Colorado. Plant with a disagreeable odor. Ascends to 6000 ft. in North Carolina. May–June.





9. Ribes Hudsoniànum Richards. Northern Black Currant. (Fig. 1873.)

Ribes Hudsonianum Richards. Frank. Journ. Ed. 2, 6. 1823.

Branches erect, unarmed. Petioles slender, 1′–4′ long; leaves broader than long, 1′–4′ wide, more or less pubescent and resinous-dotted beneath, 3–5-lobed, the lobes obtuse or acutish, coarsely dentate; racemes from the same buds as the leaves, erect, densely flowered; pedicels 2″ long or less; flowers white, 2″–3″ broad, calyx broadly campanulate, its lobes oval, obtuse; stamens short, not exserted; bracts setaceous, deciduous; fruit black, glabrous, 2″–3″ in diameter.

Hudson Bay and western Ontario to British Columbia and the Northwest Territory, south in the Rocky Mountains to Colorado. May–June.

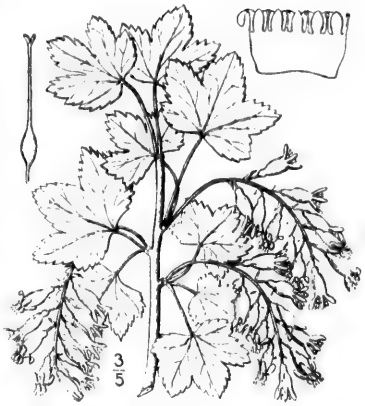
Ribes nigrum L., the Black Currant of the gardens, with similar leaves, but loosely flowered drooping racemes, is beginning to escape from cultivation.

10. Ribes flóridum L'Her. Wild Black Currant. (Fig. 1874.)

Ribes floridum L'Her. Stirp. Nov. 1: 4. 1784.
Ribes nigrum var. *Pennsylvanicum* Marsh. Arb. Amer. 132. 1785.
Ribes Pennsylvanicum Lam. Encycl. 3: 49. 1789.

Branches erect, unarmed. Petioles slender, loosely pubescent, or glabrous; leaves nearly orbicular, glabrous above, somewhat pubescent and resinous-dotted beneath, 1′–3′ wide, sharply 3–5-lobed, the lobes dentate-serrate, acutish; racemes appearing from the same buds as the leaves, pendulous, rather loosely flowered, pubescent; bractlets linear, much exceeding the pedicels, or shorter; flowers greenish-white, 4″–5″ long; calyx tubular, its lobes short, broad, obtuse; stamens not exserted; fruit globose-ovoid, black, glabrous, about 3″ in diameter.

In woods, Nova Scotia to Virginia, west to Manitoba, Kentucky, Iowa and Nebraska. April–May.



11. Ribes rùbrum L. Red Currant. (Fig. 1875.)

Ribes rubrum L. Sp. Pl. 200. 1753.
R. albinervium Michx. Fl. Bor. Am. 1: 110. 1803.
Ribes rubrum var. *subglandulosum* Maxim. Bull. Acad. St. Petersb. 19: 261. 1874.

Unarmed. Petioles slender, glabrous or sparingly pubescent, 1′–3′ long; leaves pubescent beneath, at least when young, orbicular or broader, cordate at the base, 3–5-lobed, the lobes obtuse or acutish, sharply dentate; racemes appearing from different buds than the leaves, pendulous, loosely flowered; pedicels 2″–3″ long, curved and sometimes ascending, longer than the ovate bractlets; flowers greenish or purplish, about 2″ broad; calyx flat-campanulate; stamens short; fruit red, glabrous, 2″–4″ in diameter.

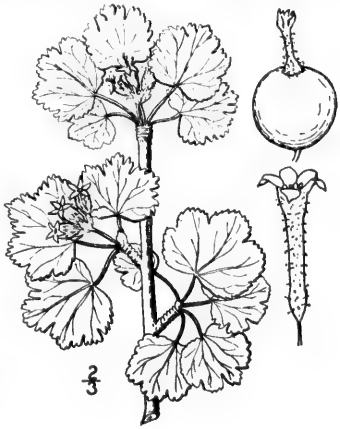
In cold woods, Labrador to Alaska, south to northern New England, New Jersey, Indiana and Minnesota, and freely escaped from cultivation in the Middle and Eastern States. Also in Europe and Asia. The European plant has been more or less modified in cultivation. May–June.

12. Ribes cèreum Dougl. White-flowered Currant. Squaw Currant. (Fig. 1876.)

Ribes cereum Dougl. Trans. Hort. Soc. 7: 512. 1830.

Unarmed. Petioles slender, more or less glandular-pubescent, 3″–10″ long; leaves reniform-orbicular, cordate at the base, ½′–1½′ wide, sparingly glandular-pubescent, or glabrate on both sides, 3–5-lobed, the lobes very obtuse, crenate or crenulate; racemes short, pubescent, pendulous, appearing from the same buds as the leaves; bractlets persistent; flowers sessile or short-pedicelled, white or greenish-white; calyx tubular, glandular; petals minute, nearly orbicular; stamens short; fruit red, insipid, glabrous or slightly glandular, about 3″ in diameter.

Nebraska to British Columbia, Arizona and California. May–June.



13. Ribes aùreum Pursh. Golden, Buffalo or Missouri Currant. (Fig. 1877.)

Ribes aureum Pursh, Fl. Amer. Sept. 164. 1814.

Unarmed. Petioles rather slender, pubescent, at least when young; leaves convolute in the bud, pubescent and ciliate, or at length glabrous, often broader than long, thick, 3-lobed or sometimes 5-lobed, broadly cuneate or truncate at the base, the lobes obtuse, few-toothed or entire; racemes leafy-bracted, few-flowered; flowers bright yellow, spicy-scented, 6″–12″ long; calyx-tube cylindric, glabrous, 3–4 times as long as the oval spreading lobes; stamens slightly exserted; fruit yellow, becoming black, glabrous, 3″–5″ in diameter.

Along streams, Minnesota to Missouri and Texas, west to California, Oregon and the Northwest Territory. Common in cultivation. April–May.

Ribes aùreum chrysocòccum Rydb. Fl. Neb. **2**1: 71. 1895, is a form with the fruit yellow when mature, found in western Nebraska.

Family 41. **HAMAMELIDÀCEAE** Lindl. Veg. Kingd. 784. 1847.

Witch Hazel Family.

Trees or shrubs, with alternate petioled simple leaves, and perfect or polygamous flowers, variously clustered. Perianth often imperfect, or sometimes none. Calyx-tube, when present, more or less adnate to the ovary, its limb truncate or 5-lobed. Petals, when present, 4–∞, perigynous. Stamens 4–∞, perigynous; filaments distinct. Disk circular or none. Ovary compound, of 2 carpels united below, 2-celled; styles 2, subulate, erect or recurved; ovules 1–∞. Fruit a 2-celled 2-beaked woody or cartilaginous capsule, dehiscent at the summit. Seeds 1–several, anatropous; embryo large; endosperm scanty.

About 15 genera and 35 species, natives of North America, Asia and South Africa.

Ovules 1 in each cell; flowers perfect or polygamous; shrubs or small trees; fruit not spiny.
- Flowers white, in catkin-like spikes; petals none. 1. *Fothergilla.*
- Flowers yellow, in axillary clusters; petals long. 2. *Hamamelis.*

Ovules several in each cell; flowers monoecious; large trees; fruit globular, spiny. 3. *Liquidambar.*

1. **FOTHERGÍLLA** Murr. Syst. Veg. 418. 1774.

Shrubs, the foliage somewhat stellate-pubescent. Leaves alternate, obovate. Flowers perfect, or often polygamous (sometimes monoecious) in catkin-like bracted terminal spikes, appearing a little before the leaves. Calyx campanulate, slightly 5–7-lobed. Petals none. Stamens about 24, inserted on the edge of the calyx; anthers subglobose. Ovary 2-celled; styles slender; ovules 1 in each cell. Capsule cartilaginous, 2-celled, 2-seeded. Seeds bony, pendulous. [Named for Dr. John Fothergill 1712–1780, an English naturalist.]

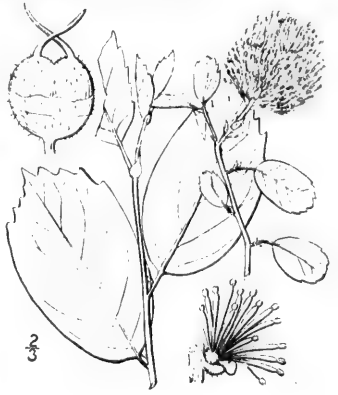
A monotypic genus of eastern North America.

1. Fothergilla Carolìna (L.) Britton. Fothergilla. (Fig. 1878.)

Hamamelis Virginiana Carolina L. Mant. 333. 1771.
Fothergilla Gardeni Murr. Syst. Veg. 418. 1774.
Fothergilla alnifolia L. f. Suppl. 267. 1781.
F. Carolina Britton, Mem. Torr. Club, **5**: 180. 1894.

A shrub, 2°–5° high, the young twigs densely stellate-pubescent. Leaves short-petioled, 2′–3′ long, obovate or broadly oval, obtuse or short-pointed at the apex, rounded or narrowed at the base, usually inequilateral, coarsely dentate-crenate above the middle, or entire, more or less stellate-pubescent; spikes dense, erect, 1′–2′ long; bracts densely pubescent, the lower ones sometimes lobed; stamens white or pinkish, 2″–4″ long; capsule very pubescent.

In wet grounds, Virginia to Georgia. April.



2. HAMAMÈLIS L. Sp. Pl. 124. 1753.

Shrubs, with alternate leaves, and clustered lateral yellow bracted flowers, appearing in late summer or autumn. Calyx 4-parted, persistent, adnate to the lower part of the ovary. Petals 4, elongated, linear, persistent, or in the staminate flowers sometimes wanting. Stamens 4, alternating with 4 scale-like staminodia; filaments very short; anthers dehiscent by a valve. Ovary 2-celled; styles 2, short; ovules 1 in each cell, pendulous. Capsule woody, at length 2-valved at the summit. Seed oblong, its testa shining. [Greek, with the apple, flower and fruit being borne together.]

A genus of 3 known species, one native of eastern North America, the others of Japan.

1. Hamamelis Virginiàna L. Witch-Hazel. (Fig. 1879.)

Hamamelis Virginiana L. Sp. Pl. 124. 1753.

A shrub, or rarely a small tree with maximum height of about 25°, the twigs slightly scurfy, or glabrous. Leaves short-petioled, obovate or broadly oval, obtuse or pointed at the apex, somewhat cordate and inequilateral at the base, stellate-pubescent, at least when young, 2′–5′ long, thick, repand-dentate; flowers in axillary clusters, nearly sessile, bright yellow, appearing late in the season, when the leaves are falling and while the previous fruit remains; petals narrow, about ½″ wide, 6″–9″ long; calyx-lobes spreading or recurved, oval, ciliate, pubescent on the outer surface; capsule maturing the next season, beaked with the 2 persistent styles, densely pubescent, 3″–4″ high, at length bursting elastically; seeds large, bony.

In low woods, New Brunswick and Nova Scotia to western Ontario and Minnesota, south to Florida and Texas. Wood hard, light brown; weight per cubic foot 43 lbs. Aug.–Dec.

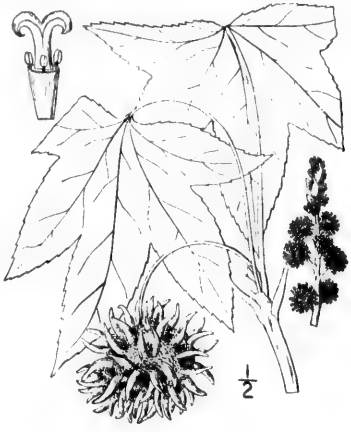
3. LIQUIDÁMBAR L. Sp. Pl. 999. 1753.

Large trees with resinous sap, simple alternate lobed petioled leaves, and small monoecious flowers in heads, the staminate clusters racemose, the pistillate ones usually solitary. Calyx and corolla of the staminate flowers none; stamens numerous; filaments short; anthers longitudinally dehiscent. Calices of the pistillate flowers confluent; petals none; anthers rudimentary, borne on the edge of the calyx; ovary partly inferior, 2-celled; ovules several or numerous; styles 2. Capsules 2-beaked, 2-valved at the summit, dry, hard, forming a dense spinose globular head. [Name Latin-Arabic referring to the fragrant sap.]

1. Liquidambar Styracíflua L. Sweet Gum. Star-leaved or Red Gum. Bilsted. Alligator-tree. (Fig. 1880.)

Liquidambar Styraciflua L. Sp. Pl. 999. 1753.

A forest tree, maximum height about 150°; bark very rough, branches usually winged with corky ridges. Twigs glabrous or slightly pubescent; leaves broader than long, 3′–9′ wide, subcordate at base, deeply 3–7-lobed, glabrous above, often pubescent in the axils of the veins beneath, the lobes triangular-ovate, acute, sharply and finely serrate; sterile flower-clusters erect or spreading, conic, consisting of numerous small heads, greenish; fertile heads long-peduncled, at length drooping, borne near the base of the sterile; head of fruit about 1′–1½′ in diameter, the fertile seeds few, with numerous minute sterile ones.



In low woods, Connecticut and southern New York to Florida, Illinois, Missouri and Mexico. Not common away from the coast in the Middle States. Wood hard, not strong, reddish brown; weight per cubic foot 37 lbs. Leaves fragrant when bruised, brilliant in autumn. Its gum, *copal-balsam* or *copalm*, used as a substitute for storax. April–May.

Family 42. **PLATANÀCEAE** Lindl. Nat. Syst. Ed. 2, 187. 1836.

PLANE-TREE FAMILY.

Large trees, with thin exfoliating bark, alternate petioled palmately lobed and veined leaves, the hollowed petiole bases enclosing the buds for the following season, and very small green monoecious flowers in dense globular heads. Receptacle somewhat fleshy. Calyx of 3–8 externally pubescent minute sepals. Corolla of as many thin glabrous petals. Staminate flowers with stamens as many as the sepals and opposite them; filaments short; anthers oblong or linear, longitudinally dehiscent. Pistillate flowers with 2–8 distinct pistils; ovary linear, 1-celled; style elongated; stigma lateral. Ripened head of fruit composed of very numerous narrowly obpyramidal nutlets which are densely pubescent below with long nearly erect hairs. Seed pendulous; endosperm thin; cotyledons linear.

The family contains only the following genus, comprising some 7 species, natives of the north temperate zone.

1. **PLÁTANUS** L. Sp. Pl. 999. 1753.

Characters of the family. [Name ancient.]

Besides the following species, 2 others occur in the western United States and 1 or 2 in Mexico.

1. Platanus occidentàlis L. Button-wood. Button-ball. Plane-tree. (Fig. 1881.)

Platanus occidentalis L. Sp. Pl. 999. 1753.

A large tree; maximum height about 130° and trunk diameter 14°; outer bark freely peeling off in thin plates, uncovering the bright white inner layers. Leaves orbicular, or wider than long, 4′–9′ wide when mature, cordate or truncate at the base, 3–5-lobed, densely floccose-pubescent with whitish branched hairs when young, less so above and becoming nearly glabrous when old, the lobes mostly large, sharply serrate, or rarely entire; petiole mostly shorter than the blade; stipules with broad spreading toothed borders, conspicuous on young shoots; fruiting heads 1′ in diameter, usually solitary, hanging on a long peduncle, persistent through the winter, the nutlets at length scattered by the wind.

Along streams and in wet woods, Maine to Ontario and Minnesota, Florida, Kansas and Texas. Wood hard, weak, difficult to split, reddish brown; weight per cubic foot 35 lbs. The largest tree of east America; often called Sycamore. The outer bark of the lower part of old trunks does not freely exfoliate. May.

Family 43. **ROSÀCEAE** B. Juss. Hort. Trian. 1759.

ROSE FAMILY.

Herbs, shrubs, or trees, with alternate (in some exotic genera opposite), simple or compound leaves, and regular perfect or rarely polygamo-dioecious flowers. Stipules commonly present, sometimes large. Calyx free from or adnate to the ovary, 5-lobed (rarely 4–9-lobed), often bracteolate. Disk adnate to the base of the calyx. Petals equal in number to the calyx-lobes, distinct, or none. Stamens usually numerous, distinct; anthers small, 2-celled. Carpels 1–∞, distinct, or adnate to the calyx. Ovary 1-celled or rarely imperfectly 2-celled; style terminal or lateral. Ovules 1, 2, or several, anatropous. Fruit various, mostly follicles or achenes; endosperm none, or rarely copious.

A family comprising about 65 genera and 1200 species, of wide geographic distribution.

Pistils few, seldom more than 5, ripening into 2–4-seeded follicles.
- Follicles dehiscent along both sutures; seeds shining. — 1. *Opulaster.*
- Follicles dehiscent along one suture; seeds dull.
  - Pistils alternate with the calyx-lobes.
    - Flowers perfect; leaves simple; shrubs. — 2. *Spiraea.*
    - Flowers dioecious; leaves 2–3-pinnate; tall herbs. — 3. *Aruncus.*
  - Pistils opposite the calyx-lobes; petals white, strap-shaped. — 4. *Porteranthus.*

Pistils numerous, ripening into 1-2-seeded drupelets or achenes.
  Pistils ripening into drupelets crowded on the receptacle.
    Drupelets very pulpy. 5. *Rubus.*
    Drupelets nearly dry, enclosed by the calyx. 6. *Dalibarda.*
  Pistils ripening into achenes.
    Style deciduous.
      Receptacle very pulpy in fruit. 7. *Fragaria.*
      Receptacle not fleshy, even in fruit.
        Pistils very numerous.
          Receptacle much enlarged in fruit; bractlets longer than calyx. 8. *Duchesnea.*
          Receptacle little enlarged; bractlets mostly shorter than calyx.
            Petals white or yellow, obtuse or emarginate. 9. *Potentilla.*
            Petals purple, abruptly acuminate, much shorter than calyx. 10. *Comarum.*
        Pistils only 1-12.
          Stamens 5; petals minute; arctic and alpine herb. 11. *Sibbaldia.*
          Stamens numerous; petals conspicuous. 12. *Waldsteinia.*
    Style persistent on the achene, often plumose.
      Calyx-lobes and petals 5; leaves interruptedly pinnate. 13. *Geum.*
      Calyx-lobes and petals 8-9; leaves simple. 14. *Dryas.*
Pistil solitary; achene with a long persistent plumose style; shrub. 15. *Cercocarpus.*
Pistils 5-15, ripening into 1-seeded capsules; filaments narrowed at base; herbs. 16. *Ulmaria.*
Pistils 1-4; fruit enclosed in the dry persistent calyx-tube; herbs.
  Calyx with 4 or 5 bractlets; petals none. 17. *Alchemilla.*
  Calyx not bracteolate, but bearing hooked prickles; petals 5. 18. *Agrimonia.*
  Calyx neither bracteolate nor prickly; petals none. 19. *Sanguisorba.*
Pistils numerous, ripening into achenes enclosed by the fleshy persistent calyx-tube; shrubs with pinnate leaves. 20. *Rosa.*

1. OPULÁSTER Medic. Pfl. Anat. 2: 109. 1799.

[PHYSOCARPA Raf. New Fl. N. A. 3: 73. 1836.]

Branching shrubs, with petioled simple palmately lobed leaves, and white flowers in terminal corymbs. Calyx campanulate, 5-lobed. Petals 5, rounded, inserted in the throat of the calyx. Stamens 20-40, inserted with the petals. Pistils 1-5, short-stipitate, when 5 alternate with the calyx-lobes. Stigma terminal, capitate. Pods 1-5, inflated, in our species at length dehiscent along both sutures, 2-4-seeded. Seeds ovoid or globose, crustaceous, shining; endosperm copious. [Greek, a wild Opulus, or cranberry-tree.]

Species about 5, 1 or perhaps 2 of eastern North America, 3 of the Rocky Mountains and Pacific Coast, 1 in Mantchuria.

1. Opulaster opulifòlius (L.) Kuntze. Ninebark. (Fig. 1882.)

Spiraea opulifolia L. Sp. Pl. 489. 1753.
Neillia opulifolia Brew. & Wats. Bot. Cal. 1: 171. 1876.
Opulaster opulifolius Kuntze, Rev. Gen. Pl. 949. 1891.

A shrub 3°-10° high, with recurved branches, glabrous twigs and foliage, the bark peeling off in thin strips. Stipules caducous; leaves petioled, ovate-orbicular, obtusely or acutely 3-lobed, cordate, truncate or broadly cuneate at the base, 1′-2′ long, or larger on the young shoots, the lobes irregularly crenate-dentate; corymbs terminal, peduncled, nearly spherical, many-flowered, 1′-2′ broad; pedicels slender, glabrous or slightly pubescent, 5″-8″ long; flowers white or purplish; calyx glabrous or nearly so; follicles 3-5, glabrous, shining, obliquely subulate-tipped, twice as long as the calyx.

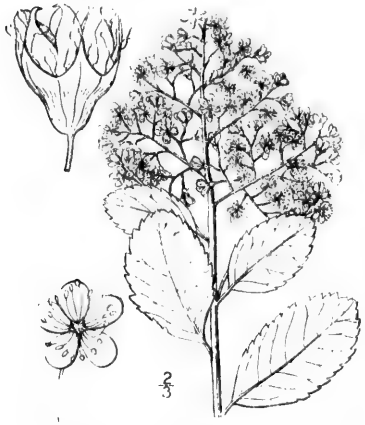
River-banks and in rocky places, Quebec to Georgia, west to Manitoba and Kansas. June.

2. SPIRAÈA L. Sp. Pl. 489. 1753.

Shrubs, with alternate simple pinnate or pinnatifid mainly stipulate leaves. Flowers terminal or axillary, racemose, cymose, corymbose or paniculate, white or pink, perfect. Calyx persistent, its tube mainly campanulate, 4-5-lobed. Petals 4-5, inserted on the calyx, short-clawed. Stamens 20-60, distinct, inserted on the calyx; filaments filiform; anthers didymous. Disk adnate to the calyx-tube. Pistils commonly 5 (rarely 1-8), superior, sessile or short-stipitate, alternate with the calyx-lobes. Stigmas capitate or discoid; ovules 2-∞. Follicles usually 5, not inflated, dehiscent along 1 suture. Seeds linear, pendulous, the testa dull; endosperm little or none. [Greek, twisting, the pods twisted in some species.]

About 60 species, natives of the north temperate zone. Besides the following, about 2 others occur in the western parts of North America.

Flowers in dense terminal panicles.
  Glabrous or nearly so throughout. 1. *S. salicifolia.*
  Twigs and lower surfaces of the leaves woolly-pubescent. 2. *S. tomentosa.*
Flowers in terminal corymbs.
  Leaves broadly oval or ovate, thick, serrate. 3. *S. corymbosa.*
  Leaves oblong, thin, nearly entire. 4. *S. Virginiana.*

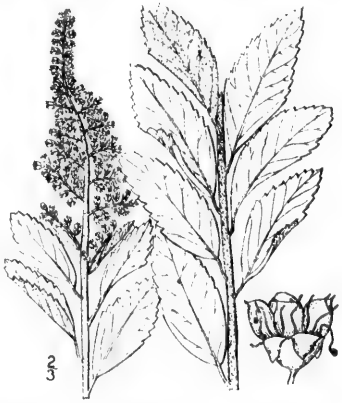


1. Spiraea salicifòlia L. Willow-leaved or American Meadow-sweet. Quaker Lady. (Fig. 1883.)

Spiraea salicifolia L. Sp. Pl. 489. 1753.

An erect shrub, 2°–4° high, simple, or branched above, nearly glabrous. Leaves petioled, oblanceolate, obovate, lanceolate or oval, glabrous or very nearly so, sharply serrate, especially above the middle, 1′–2′ long, 4″–12″ wide, or on young shoots much larger, obtuse or acutish at the apex, mainly cuneate at the base, pale beneath; stipules deciduous or none; flowers white or pinkish-tinged, 2″–3″ broad, in dense terminal panicles; follicles glabrous.

In swamps or moist ground, Newfoundland to the Rocky Mountains, south to Georgia and Missouri. Also in northern Europe and Asia. Called also Queen-of-the-Meadow. June–Aug.

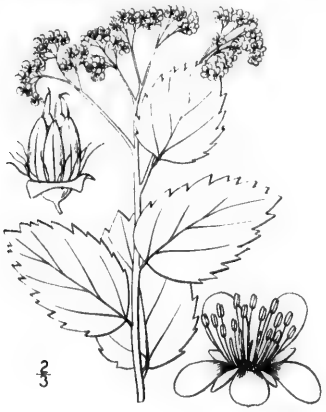


2. Spiraea tomentòsa L. Hardhack. Steeple-bush. (Fig. 1884.)

Spiraea tomentosa L. Sp. Pl. 489. 1753.

Erect, shrubby, usually simple, the stems floccose-pubescent. Leaves short-petioled, ovate or oval, 1′–2′ long, 6″–12″ wide, unequally serrate, obtuse or acutish at the apex, narrowed or rounded at the base, glabrous and dark-green above, woolly-pubescent with whitish hairs beneath; stipules deciduous or none; flowers pink or purple, rarely white, about 2″ broad, in dense terminal panicles; follicles pubescent.

In swamps and low grounds, Nova Scotia to Manitoba, south to Georgia and Kansas. July–Sept.



3. Spiraea corymbòsa Raf. Corymbed Spiraea. (Fig. 1885.)

Spiraea corymbosa Raf. Prec. Decouv. 36. 1814.
Spiraea betulifolia var. *corymbosa* S. Wats. in A. Gray, Man. Ed. 6, 153. 1890.

A shrub, 1°–3° high, simple or little branched, nearly glabrous throughout. Leaves petioled, rather thick, oval, ovate or orbicular, narrowed, rounded or slightly cordate at the base, obtuse at the apex, unequally serrate with pointed teeth, especially above the middle, green above, paler and sometimes minutely pubescent beneath, 1½′–3′ long, 1′–2′ wide; stipules deciduous or none; flowers white, about 2″ broad in dense compound terminal often leafy corymbs; follicles glabrous.

On banks or in rocky places, mountains of Georgia to New Jersey. May–June.

4. Spiraea Virginiàna Britton. Virginia Spiraea. (Fig. 1886.)

S. Virginiana Britton, Bull. Torr. Club, 17: 314. 1890.

A glabrous much-branched shrub, the branches forming wands 1°–4° long. Stipules deciduous or none; leaves petioled, oblong or oblanceolate, thin, obtuse or acutish at the apex, cuneate or rounded at the base, 1½′–2′ long, 5″–8″ wide, green above, pale or slightly glaucous beneath, entire, or with a few low teeth above the middle; flowers white, about 3″ wide, in terminal compound corymbs; pedicels and calyx glaucous; follicles glabrous.

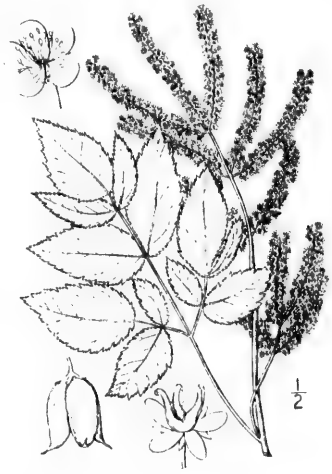
On damp rocks, Morgantown, W. Va., to the mountains of North Carolina. June.

Spiraea sorbifòlia, a large shrub with odd-pinnate leaves, lanceolate serrate leaflets, and large panicles of white flowers, much cultivated for ornament, has begun to escape into thickets in the Middle States. It is native of Siberia.

3. ARÚNCUS Adans. Fam. Pl. 2: 295. 1763.

Tall perennial herbs, with large 2–3-pinnate leaves, stipules minute or wanting, and very numerous white dioecious flowers in paniced spikes. Calyx mostly 5-lobed. Petals as many as the calyx-lobes. Stamens numerous, inserted on the calyx; filaments filiform. Pistils usually 3, alternate with the calyx-lobes. Follicles glabrous, at length reflexed, usually 2-seeded. Seeds minute, not shining.

Two known species, the following widely distributed in the north temperate zone, the other Japanese.



1. Aruncus Arúncus (L.) Karst. Goat's-beard. (Fig. 1887.)

Spiraea Aruncus L. Sp. Pl. 490. 1753.
Aruncus sylvester Kostel. Ind. Hort. Prag. 15. Name only. 1844.
Aruncus Aruncus Karst. Deutsch. Fl. 779. 1880–83.

Glabrous throughout, stem erect, somewhat branched, 3°–7° high. Leaves long-petioled, the lower 1° long or more, pinnate, 3–7-foliolate; leaflets ovate, lanceolate or oval, thin, stalked or sessile, acuminate or acute at the apex, rounded, slightly cordate or sometimes narrowed at the base, sharply doubly serrate or incised, 1′–3′ long; spikes slender, elongated, erect or spreading; flowers 1″–2″ wide; follicles short.

In rich woods, mountains of Pennsylvania to Iowa, south to Georgia and Missouri. Also on the northwest coast from Oregon to Alaska, and in northern Europe and Asia. Ascends to 4200 ft. in North Carolina. May–July.

4. PORTERÁNTHUS Britton, Mem. Torr. Club, 4: 115. 1894.

[GILLENIA Moench, Meth. Suppl. 286. 1802. Not GILLENA Adans. 1763.]

Erect perennial herbs, with nearly sessile stipulate 3-foliolate or 3-parted leaves, and white or pinkish perfect flowers in loose terminal panicles. Calyx cylindric, persistent, narrowed at the throat, 10-nerved, 5-toothed, the teeth imbricated, slightly glandular. Petals 5, linear-lanceolate, spreading, convolute in the bud, somewhat unequal, inserted on the calyx. Stamens 10–20, included; filaments short; anthers large. Carpels 5, villous-pubescent, opposite the calyx-lobes. Ovules ascending; style filiform. Follicles 5, 2–4-seeded. Seeds with endosperm. [In honor of Thomas Conrad Porter, Professor in Lafayette College.]

A genus of 2 known species, natives of eastern North America.

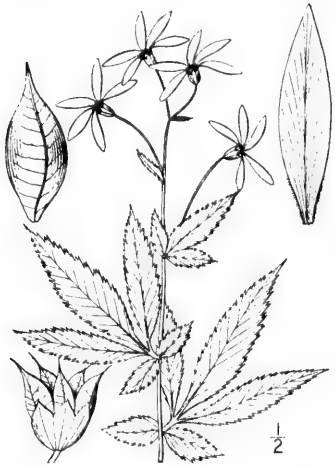
Leaflets serrate; stipules subulate, mainly entire. 1. *P. trifoliatus.*
Leaflets incised; stipules broad, foliaceous, incised. 2. *P. stipulatus.*

1. Porteranthus trifoliàtus (L.) Britton. Indian Physic. Bowman's-root. (Fig. 1888.)

Spiraea trifoliata L. Sp. Pl. 490. 1753.
Gillenia trifoliata Moench, Meth. Suppl. 286. 1802.
Porteranthus trifoliatus Britton, Mem. Torr. Club, 5: 115. 1894.

Herbaceous from a perennial root, erect, branching, 2°–4° high, glabrous or somewhat pubescent. Stipules subulate, 2″–4″ long, entire or serrate; leaflets short stalked, oval, ovate, lanceolate or slightly obovate, acuminate at the apex, narrowed at the base, 2′–3′ long, irregularly serrate; upper leaves often 3-lobed, or sometimes merely serrate; panicles few-flowered; pedicels slender; petals white or pinkish, 5″–6″ long; calyx reddish; pods pubescent, subulate-tipped, little exceeding the calyx.

Woodlands, New York to Michigan, Georgia and Missouri. Ascends to 4500 ft. in North Carolina. Stipules rarely larger, lanceolate. May–July.



2. Porteranthus stipulàtus (Muhl.) Britton. American Ipecac. (Fig. 1889.)

Spiraea stipulata Muhl.; Willd. Enum. 542. 1809.
Gillenia stipulacea Nutt. Gen. 1: 307. 1818.
Porteranthus stipulatus Britton, Mem. Torr. Club, 5: 115. 1894.

Resembling the preceding species, but generally more pubescent. Stipules foliaceous, broad, ovate, acuminate or acute, 4″–12″ long, sharply incised-serrate; leaflets commonly narrower than those of the preceding, incised-serrate, or those of the lower leaves deeply pinnatifid; flowers commonly fewer and slightly smaller; pods less pubescent or sometimes quite glabrous.

In woods, western New York to Indiana and Kansas, south to Alabama, Louisiana and the Indian Territory. June–July.

5. RÙBUS L. Sp. Pl. 492. 1753.

Perennial herbs, shrubs or trailing vines, often prickly, with alternate simple lobed or 3–7-foliolate leaves, the stipules adnate to the petiole. Flowers terminal or axillary, solitary, racemose or panicled, white, pink or purple, perfect or sometimes dioecious. Calyx persistent, not bracted, deeply 5-parted, its tube short and broad. Petals 5, deciduous. Stamens ∞, usually numerous, inserted on the calyx, distinct. Carpels ∞, rarely few, inserted on a convex or elongated receptacle, ripening into drupelets and forming an aggregate fruit. Ovules 2, one abortive. Style nearly terminal, slender. Seed pendulous. [The ancient name of the bramble, from *ruber*, red.]

About 250 species, of wide geographic distribution, most abundant in the north temperate zone. Besides the following, some 10 others occur in North America beyond our area. The stems of many species are biennial.

Leaves simple, crenate or palmately lobed.
  Shrubby, 2°–5° high, branched; flowers corymbose.
    Flowers numerous, red-purple. 1. *R. odoratus.*
    Flowers few, white; western. 2. *R. parviflorus.*
  Herbaceous, 3′–9′ high, simple; flowers solitary, white. 3. *R. Chamaemorus.*

Leaves 3–7-foliolate.
Fruit falling away from the dry receptacle. RASPBERRIES.
Herbaceous, unarmed, 2′–6′ high, 1–2-flowered. 4. *R. arcticus.*
Shrubby, erect, decumbent or ascending, many-flowered.
Stems bristly, not glaucous; fruit light red. 5. *R. strigosus.*
Stems prickly, slightly glaucous; fruit dark red. 6. *R. neglectus.*
Stems prickly, very glaucous; fruit purple-black. 7. *R. occidentalis.*
Fruit persistent on the fleshy receptacle. BLACKBERRIES.
Herbaceous, annual, unarmed; fruit red-purple. 8. *R. Americanus.*
Shrubby, erect, recurved or ascending; fruit black.
Leaves pubescent or glandular-pubescent beneath; plants prickly.
Fruit broadly oval, very pulpy. 9. *R. villosus.*
Fruit narrowly oblong or thimble-shaped, comparatively dry. 10. *R. Alleghaniensis.*
Leaves glabrous both sides; plant unarmed. 11. *R. Millspaughii.*
Leaves white-woolly beneath; plant prickly. 12. *R. cuneifolius.*
Shrubby, trailing or procumbent.
Stem bristly, scarcely prickly; leaflets obovate, ½′–1½′ long. 13. *R. hispidus.*
Stem densely bristly; leaflets acute or acuminate, 2′–4′ long. 14. *R. setosus.*
Stem prickly; leaflets ovate or oval.
Leaflets thick, coriaceous, persistent. 15. *R. trivialis.*
Leaflets thin, deciduous.
Leaflets pubescent beneath, mostly rounded or cordate at base. 16. *R. Baileyanus*
Leaflets nearly or quite glabrous, mostly narrowed at base. 17. *R. Canadensis.*

1. **Rubus odoràtus** L. Purple-flowering Raspberry. (Fig. 1890.)

Rubus odoratus L. Sp. Pl. 494. 1753.

Erect, branched, shrubby, glandular-pubescent and somewhat bristly, not prickly, 3°–5° high. Stipules small, lanceolate, acuminate; leaves simple, petioled, large (sometimes nearly 1° broad), 3–5-lobed, cordate at the base, pubescent, especially on the veins of the lower surfaces, the lobes acuminate, finely serrate, the middle one longer than the others; flowers terminal, rather numerous, corymbose or paniculate, purple, showy, 1′–2′ broad; bracts membranous; calyx-lobes tipped with a long slender appendage; fruit red when ripe, depressed-hemispheric, scarcely edible.

In rocky woods, Nova Scotia to Ontario and Michigan, south to Georgia and Tennessee. A form with white flowers has been found at Pine Hill, Ulster Co., N. Y. June–Aug. In England called Virginia Raspberry.

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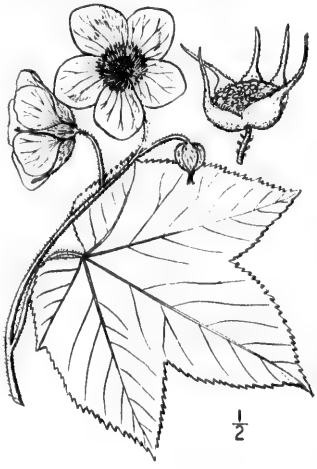
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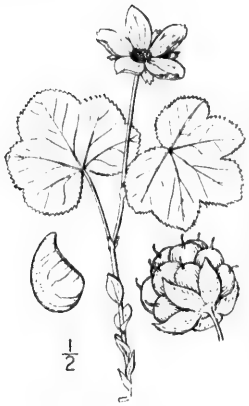
2. **Rubus parviflòrus** Nutt. Salmonberry. White-flowering Raspberry. (Fig. 1891.)

Rubus parviflorus Nutt. Gen. 1: 308. 1818.
Rubus Nutkanus Mocino; DC. Prodr. 2: 566. 1825.

Similar to the preceding species but usually less glandular and scarcely bristly. Leaves petioled, simple, cordate at the base, 3–5-lobed, the lobes acute or obtusish, rarely acuminate, the middle one equalling or but slightly longer than the others, all coarsely and unequally serrate; flowers few, corymbose, white, terminal, 1′–2′ broad; calyx-lobes tipped with a long, slender appendage; fruit depressed-hemispheric, scarcely edible, red when ripe.

In woods, Michigan, Minnesota and western Ontario to Alaska and California, south in the Rocky Mountains to Utah and Colorado. May–July.

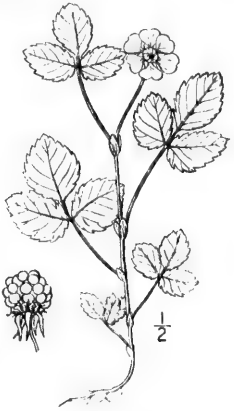


3. Rubus Chamaemòrus L. Cloudberry. Knotberry. Mountain Bramble. Mountain Raspberry. (Fig. 1892.)

Rubus Chamaemorus L. Sp. Pl. 494. 1753.

Herbaceous, rootstock creeping, branches erect, 3′–10′ high, finely pubescent or nearly glabrous, scaly below; stipules ovate, obtuse; leaves petioled, simple, orbicular or broader, 5–9-lobed, cordate or reniform at the base, pubescent or glabrous, 1′–3′ broad, the lobes usually short broad, dentate; flowers dioecious, solitary, terminal, white, 6″–12″ broad; sepals ovate, shorter than the petals, sometimes toothed toward the apex; fruit red, composed of few drupelets, edible and pleasant.

In peat-bogs and swamps, Maine and New Hampshire to arctic America, extending to Alaska and British Columbia. Also in northern Europe and Asia. June–July.



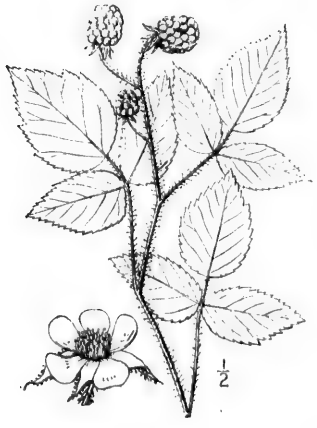
4. Rubus árcticus L. Arctic Raspberry or Bramble. (Fig. 1893.)

Rubus arcticus L. Sp. Pl. 494. 1753.

Stems erect, simple or branched from the base, herbaceous, 3′–10′ high, unarmed, finely pubescent, sometimes leafless below. Stipules oval or ovate, obtuse, 2″–4″ long; leaves slender-petioled, 3-foliolate (rarely 5-foliolate); leaflets sessile or short-stalked, rhombic-ovate or obovate, coarsely and unequally serrate or slightly lobed, 9″–18″ long; flowers solitary, or occasionally 2, terminal, slender-peduncled, pink, 6″–12″ broad, sometimes dioecious; sepals acute, equalling or shorter than the obovate entire or emarginate petals; fruit light red, of several or numerous drupelets, edible, fragrant.

In peat-bogs and damp woods, Quebec to Manitoba and British Columbia, and throughout arctic America. Also in northern Europe and Asia. Called also Strawberry-leaved Bramble. Summer.

5. Rubus strigòsus Michx. Wild Red Raspberry. (Fig. 1894.)



Rubus strigosus Michx. Fl. Bor. Am. 1: 297. 1803.
Rubus Idaeus var. *strigosus* Maxim. Bull. Acad. St. Petersb. 17: 161. 1872.

Stems shrubby, biennial, branched, 3°–6° high, usually densely clothed with weak glandular bristles, or the older stems with small hooked prickles. Stipules narrow, deciduous; leaves petioled, pinnately 3–5-foliolate; leaflets ovate or ovate-oblong, acuminate, sharply and irregularly serrate or slightly lobed, rounded at the base, 1′–3′ long, whitish-pubescent beneath; inflorescence terminal and axillary, racemose or paniculate, loose; pedicels slender, curving in fruit; flowers 4″–6″ broad; petals white, ascending, about equalling the spreading acuminate sepals; fruit elongated-hemispheric, light red, white in a cultivated form.

In dry or rocky situations, Newfoundland and Labrador to Manitoba and British Columbia, south in the Alleghanies to North Carolina, and in the Rocky Mountains to New Mexico. Ascends to 5500 ft. in North Carolina. The original of the Cuthbert and Hansall Raspberries. May–July. Fruit ripe July–Sept.

6. Rubus negléctus Peck. Purple Wild Raspberry. (Fig. 1895.)

Rubus neglectus Peck, Rep. Reg. Univ. N. Y. 22: 53. 1869.
Rubus strigosus × *occidentalis* Aust. Bull. Torr. Club, 1: 31. 1870.

Intermediate between the preceding species and the next. Stems usually elongated, recurved and rooting at the tip, glaucous, sparingly bristly and prickly; leaflets ovate, sharply and irregularly incised-serrate, very white-pubescent beneath, 1′–3′ long, inflorescence corymbose, rather compact, terminal and often axillary; pedicels erect or ascending even in fruit; flowers 4″–5″ broad; petals white, erect; fruit nearly hemispherical, dark-red or purple (yellowish in a cultivated form).

In dry or rocky soil, New England to Pennsylvania. The original of the Carolina, Gladstone and other Raspberries. June–July. Fruit ripe July–Aug.

7. Rubus occidentàlis L. Black Raspberry. Thimble-berry. (Fig. 1896.)

Rubus occidentalis L. Sp. Pl. 493. 1753.
Rubus Idaeus var. *Americanus* Torr. Ann. Lyc. N. Y. 2: 196. 1825.

Very glaucous, stems cane-like, recurved, often rooting at the tip, sometimes 10°–12° long, sparingly armed with small hooked prickles, rarely slightly glandular-bristly above. Stipules setaceous, deciduous; leaves pinnately 3-foliolate (rarely 5-foliolate); leaflets ovate, acuminate, coarsely incised-serrate, very white-pubescent beneath; flowers as in the preceding species; inflorescence corymbose, compact, usually only terminal; pedicels short, ascending or erect in fruit; fruit purple-black, depressed-hemispheric.

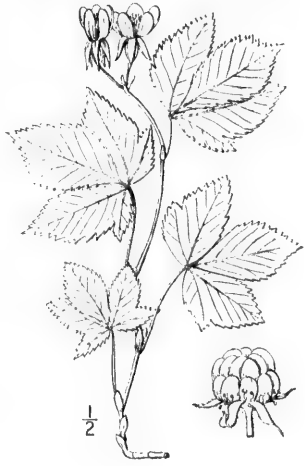
Quebec and Ontario, south to Georgia and Missouri. Ascends to 3000 ft. in Virginia. The original of the Gregg, Hilborn and other Raspberries. May–June. Fruit ripe July. Called also Scotch-cap and Black-cap.

8. Rubus Americànus (Pers.) Britton. Dwarf Raspberry. (Fig. 1897.)

Rubus saxatilis var. *Canadensis* Michx. Fl. Bor. Am. 1: 298. 1803. Not *R. Canadensis* L. 1753.
R. saxatilis var. *Americanus* Pers. Syn. 2: 52. 1807.
Rubus triflorus Richards. Franklin Journ. Ed. 2, App. 19. 1823.
R. Americanus Britton, Mem. Torr. Club, 5: 185. 1894.

Stem trailing or ascending, unarmed, annual, herbaceous, or slightly woody and sometimes branched below, 6′–18′ long, somewhat pubescent. Stipules oval, entire or few-toothed, 3″–5″ long; leaves petioled, pedately or pinnately 3-foliolate, rarely 5-foliolate; leaflets rhombic-ovate, glabrous or nearly so, acute, the lateral ones mostly rounded, the terminal one cuneate at the base, all sharply and often doubly serrate; peduncles slender, 1–3-flowered, glandular-pubescent; flowers 4″–6″ broad; petals 5–7, white, spatulate-oblong, erect, rather longer than the acuminate reflexed sepals; fruit red-purple, about 6″ long.

In swamps, Newfoundland to Manitoba, south to New Jersey and Iowa. Intermediate between Blackberries and Raspberries. May–July. Fruit ripe July–Aug.



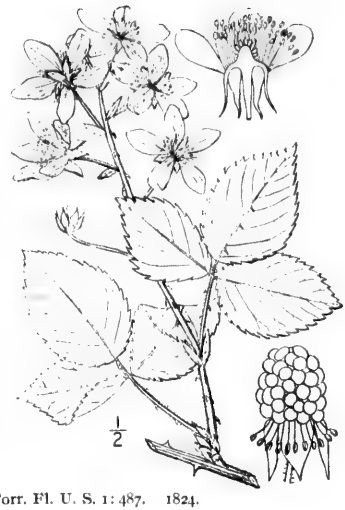
9. **Rubus villòsus** Ait. High Bush Blackberry. (Fig. 1898.)

Rubus fruticosus Marsh. Arb. Am. 137. 1785. Not L. 1753.

Rubus villosus Ait. Hort. Kew. 2: 210. 1789.

Shrubby, branched, perennial, glandular-pubescent; stems erect or recurved, 3°–10° long, armed with stout recurved prickles. Stipules linear or lanceolate; leaves 3–5-foliolate; leaflets ovate or ovate-oblong, acute or acuminate, coarsely and unequally serrate, pubescent beneath, the terminal one stalked; inflorescence mainly terminal, racemose-paniculate; bracts small; flowers 9″–12″ broad; petals white, obovate, much exceeding the sepals; fruit black, pulpy, 6″–12″ long.

In dry soil, New England to Florida and Arkansas, mostly at low altitudes. May–June. Fruit ripe July–Aug. A form with small white fruit occurs in Michigan.



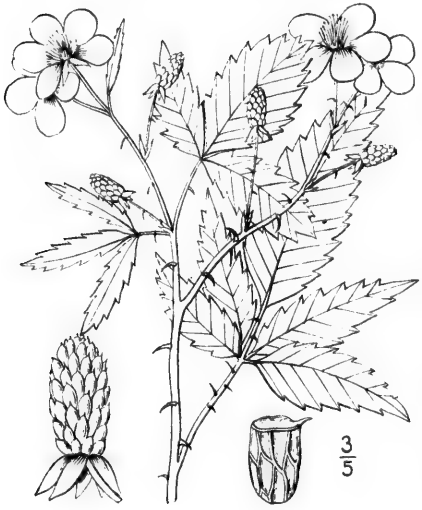
Rubus villòsus frondòsus Bigel.; Torr. Fl. U. S. 1: 487. 1824.

Rubus frondosus Bigel. Fl. Bost. Ed. 2: 199. 1824.

Less glandular, or merely pubescent; stems erect or ascending; flowers mostly fewer and smaller, leafy-bracted. Range of the type, apparently extending further north and northwest. Perhaps specifically distinct.

Rubus laciniàtus Willd., found escaped from cultivation in southern New York, has laciniate or pinnatifid leaflets. It is a native of Europe.

10. **Rubus Alleghaniénsis** Porter. Mountain Blackberry. (Fig. 1899.)



Rubus villosus var. *montanus* Porter, Bull. Torr. Club, 17: 15. 1890.

Rubus montanus Porter, Bull. Torr. Club, 21: 120. 1894. Not Ort. 1852.

Rubus Alleghaniensis Porter, Bull. Torr. Club, 23: 153. 1896.

Glandular or glandless, resembling the preceding species in foliage and flowers. Stems rather more slender, red or purple, very prickly, erect or ascending, 2°–8° high. Leaflets usually narrower, ovate-lanceolate; fruit narrowly oblong, oblong-conic or thimble-shaped, 8″–14″ long, 3″–4″ in diameter, much less pulpy and of a peculiar flavor; racemes sometimes very long, and pubescent; drupelets oblong when dry.

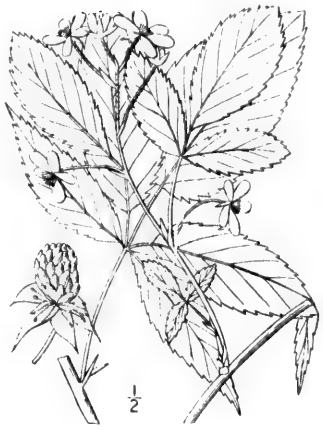
In dry soil, Ontario and northern New York to Pennsylvania and perhaps to Virginia, mostly at high altitudes. The characteristic High Blackberry of the mountains of the Eastern and Middle States. May–July. Fruit ripe Aug.–Sept.

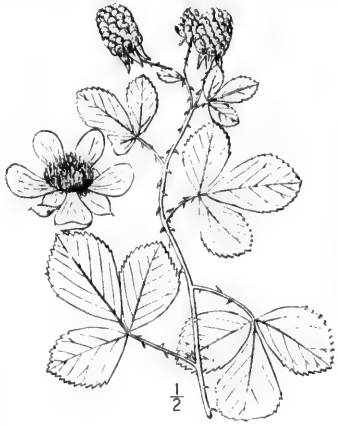
11. Rubus Millspaùghii Britton. Millspaugh's Blackberry. (Fig. 1900.)

Rubus Millspaughii Britton, Bull. Torr. Club, **18**: 366. 1891.

Ascending, wand-like, entirely unarmed, or with a few weak prickles, glabrous or the younger shoots scurfy-pubescent, stems 5°–12° long. Leaves long-petioled, pedately 5-foliolate, or some 3-foliolate; leaflets oval, thin, glabrous on both sides, long-acuminate or acute, rounded or narrowed at the base, often 6′ long and 2′ wide, sharply but not very deeply dentate; stalk of the terminal leaflet 1½′–4′ long; inflorescence loosely racemose; bracts linear-lanceolate; pedicels slender, ascending; sepals lanceolate, acuminate; fruit black, very pulpy, 8″–12″ long.

In thickets and rich woods, mountains of New England, the Adirondacks, and in the higher southern Alleghanies. June–Aug.





12. Rubus cuneifòlius Pursh. Sand Blackberry. Knee-high Blackberry. (Fig. 1901.)

Rubus parvifolius Walt. Fl. Car. 149. 1788. Not L. 1753.
Rubus cuneifolius Pursh, Fl. Am. Sept. 347. 1814.

Shrubby, erect or nearly so, 1°–3° high, much branched, armed with stout straight or recurved prickles, the young shoots and lower surfaces of the leaves densely whitish-pubescent. Stipules linear; leaves petioled, 3–5-foliolate; leaflets thick, rugose above, 1′–2′ long, obovate or rarely oval, obtuse, dentate, especially above the middle, the terminal one cuneate; peduncles mainly terminal, 2–5-flowered; flowers white or pinkish, nearly 1′ broad; petals exceeding the sepals; fruit brownish-black, often 1′ long, delicious.

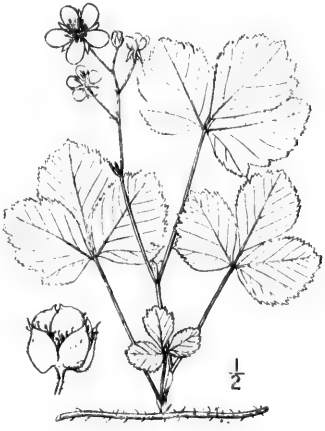
In sandy soil, southern Connecticut to Florida, west to Missouri and Louisiana. May–July. Fruit ripe July–Aug.

13. Rubus hìspidus L. Hispid or Running Swamp Blackberry. (Fig. 1902.)

Rubus hispidus L. Sp. Pl. 493. 1753.
Rubus obovalis Michx. Fl. Bor. Am. 1: 298. 1803.

Stems slender, slightly woody, creeping, more or less densely beset with weak bristles. Branches erect or ascending, 4′–12′ long, naked, or with a few scattered prickles; leaves petioled, 3-foliolate or rarely 5-foliolate; leaflets obovate, obtuse, thick, persistent, narrowed at the base, ½′–1½′ long, sharply serrate above the middle; peduncles terminal or axillary, nearly or quite leafless; flowers racemose, white, 6″–8″ broad; petals exceeding the sepals; fruit nearly black when ripe, sour, usually less than ½′ long, composed of few drupelets.

In swamps or low grounds, rarely in dry soil, Nova Scotia to Ontario and Minnesota, south to Georgia and Kansas. Ascends to 3500 ft. in North Carolina. Leaves shining, persistent into the winter. Leaflets of sterile shoots sometimes 2′–3′ long. June–July.

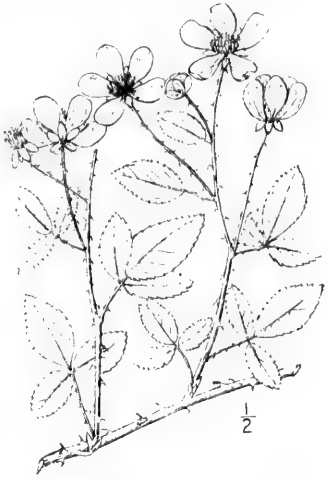


14. Rubus setòsus Bigel. Bristly Blackberry. (Fig. 1903.)

Rubus setosus Bigel. Fl. Bost. Ed. 2, 198. 1824.
Rubus hispidus var. *setosus* T. & G. Fl. N. A. 1: 456. 1840.
Rubus hispidus var. *suberecta* Peck, Rep. N. Y. State Mus. 44: 31. 1891. Not *R. suberectus* Anders. 1815.

Similar to the preceding species but stouter, stems ascending or decumbent, the older parts densely clothed with slender stiff slightly reflexed bristles. Leaflets generally 5 in leaves of the sterile shoots, 3 in those of the flowering branches, obovate, mostly acute or short-acuminate, sometimes 4′ long, short-stalked or sessile; flowers 6″–9″ broad, racemose; fruit small, sour.

In dry or marshy soil, Quebec and northern New York to eastern Pennsylvania. July–Aug.

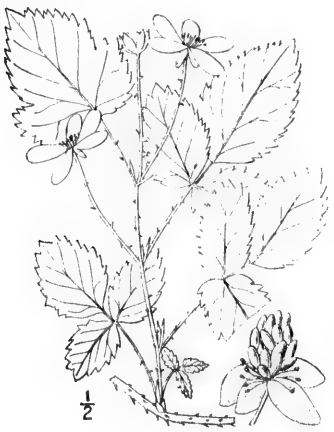


15. Rubus triviàlis Michx. Low Bush-Blackberry. (Fig. 1904.)

Rubus trivialis Michx. Fl. Bor. Am. 1: 296. 1803.

Stem trailing or procumbent, several feet long, beset with stout hooked prickles, and sometimes bristly. Branches erect, 3′–9′ high, prickly and usually pubescent or setose; leaves petioled, 3-foliolate (rarely 5-foliolate), leaflets oval, or sometimes ovate lanceolate, coriaceous, evergreen, glabrous or very nearly so, acute or obtusish at the apex, narrowed or rounded at the base, sharply serrate; peduncles terminal, prickly, 1–5-flowered; flowers often 1′ broad, white; petals much exceeding the reflexed sepals; fruit black, often 1′ long, well flavored.

In dry sandy soil, Virginia to Florida, west to Missouri and Texas. Called also Southern Dewberry. March–May.



16. Rubus Baileyànus Britton. Bailey's Blackberry. (Fig. 1905.)

Rubus villosus var. *humifusus* T. & G. Fl. N. A. 1: 455. 1840. Not *R. humifusus* Weihe, 1825.
Rubus invisus Britton, Bull. Torr. Club, 20: 279. 1893. Not *R. Canadensis* var. *invisus* Bailey, 1891.
R. Baileyanus Britton, Mem. Torr. Club, 5: 185. 1894.
Rubus villosus Randii Bailey; Redf. & Rand, Fl. Mt. Desert, 94. 1894.

Intermediate in habit between *R. villosus* and *R. Canadensis*, stem trailing or ascending, sparingly prickly, 3°–6° long. Leaflets broadly ovate or oval, pubescent, at least on the lower surface, mostly rounded or cordate at the base, acute or obtuse, the uppermost leaves almost invariably unifoliolate; flowers few, rather large; fruit small, not as succulent as that of the related species.

In dry woods and thickets, Maine to southern New York and Virginia. May–June.

17. Rubus Canadénsis L. Low Running Blackberry. Dewberry. (Fig. 1906.)

Rubus Canadensis L. Sp. Pl. 494. 1753.

Trailing, shrubby, stem often several feet long, armed with scattered prickles or nearly naked. Branches erect or ascending, 4′–12′ long, more or less pubescent, sometimes prickly, sometimes slightly glandular; leaves petioled, 3–7-foliolate; leaflets ovate, oval or ovate-lanceolate, thin, deciduous, acute or sometimes obtusish at the apex, rounded or narrowed at the base, sharply dentate-serrate, usually sparingly pubescent; flowers terminal, few and racemose, or sometimes solitary, white, about 1′ broad; peduncles leafy; sepals shorter than or exceeding the petals; fruit black, delicious, often 1′ long, less firmly attached to the receptacle than in *R. villosus*.

In dry soil, Newfoundland and Ontario to Lake Superior, south to Virginia, Louisiana and the Indian Territory. April-May. Fruit ripe June-July.

Rubus Canadénsis invisus Bailey, Am. Gard. 12: 83. 1891.

Stem stouter than that of the type, often partly ascending; leaflets larger, sometimes 3′ long and 2′ wide, coarsely dentate with pointed teeth; peduncles elongated, erect; flower-buds conspicuously tipped by the connivent ends of the sepals. Central and western New York. The Bartell and Mammoth Dewberries of cultivation.

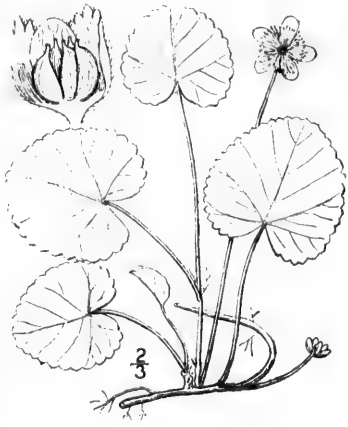
Rubus Canadénsis roribáccus Bailey, Am. Gard. 11: 642. 1890.

Leaflets very large, doubly serrate, incised or lobed; flowers often 2′ wide; sepals large and often lobed; fruit larger than that of the type. The Lucretia Dewberry of cultivation. Western New Jersey to Virginia and West Virginia.

6. DALIBÀRDA L. Sp. Pl. 491. 1753.

A low tufted perennial downy-pubescent herb, with simple long-petioled ovate-orbicular cordate and crenate leaves, and scape-like peduncles bearing 1 or 2 white flowers. Calyx deeply 5–6-parted, its divisions somewhat unequal, the 3 larger ones commonly toothed. Petals 5, sessile, soon deciduous. Stamens numerous. Pistils 5–10; style terminal. Drupelets 5–10, nearly dry, enclosed at length in the connivent calyx-segments. [Named in honor of Thos. Fran. Dalibard, a French botanist of the 18th century.]

A monotypic genus of northeastern North America.



1. Dalibarda rèpens L. Dalibarda. (Fig. 1907.)

Dalibarda repens L. Sp. Pl. 491. 1753.

Rubus Dalibarda L. Sp. Pl. Ed. 2, 708. 1762.

Dalibarda violaeoides Michx. Fl. Bor. Am. 1: 299. 1803.

Stems slender, unarmed, much tufted, several inches long. Leaves pubescent on both sides, 9″–2′ in diameter, the crenations low, obtuse or sometimes mucronulate; stipules setaceous; flowers 4″–5″ broad; peduncles slender, 1½′–5′ long; achenes oblong, pointed, slightly curved, minutely roughened, 2″ long, rather more than ½″ in thickness.

In woods, Nova Scotia to Minnesota, south to Pennsylvania, southern New Jersey, Ohio and Michigan. Plant resembling a low violet, and commonly bearing cleistogamous flowers. June–Sept.

7. FRAGÀRIA L. Sp. Pl. 494. 1753.

Perennial acaulescent herbs propagating by runners, with alternate basal tufted petioled 3-foliolate leaves, and sheathing membranous stipules. Flowers white, corymbose or racemose on erect naked scapes, polygamo-dioecious, the pedicels often recurved. Calyx persistent, its tube obconic or turbinate, 5-bracteolate, deeply 5-lobed. Petals 5, obovate, short-clawed. Stamens ∞; filaments slender. Carpels ∞, inserted on a glabrous convex or elongated receptacle, which becomes fleshy or pulpy in fruit; styles lateral. Achenes ∞, minute, dry, crustaceous. Seed ascending. [Latin, *fragum*, strawberry, signifying fragrance.]

About 15 species, natives of the north temperate zone and the Andes of South America. Besides the following, 2 or 3 others occur in the western parts of North America.

Achenes imbedded in pits on the fruit; fruiting scape shorter than the leaves.
Leaflets broadly oval or obovate; fruit globose or ovoid. 1. *F. Virginiana.*
Leaflets oblong or narrowly obovate; fruit oblong-conic. 2. *F. Canadensis.*
Achenes borne on the surface of the fruit; fruiting scape as long as or exceeding the leaves.
Stout; leaflets thickish; plant naturalized in fields. 3. *F. vesca.*
Slender; leaflets thin; native plant of shaded rocky situations. 4. *F. Americana.*

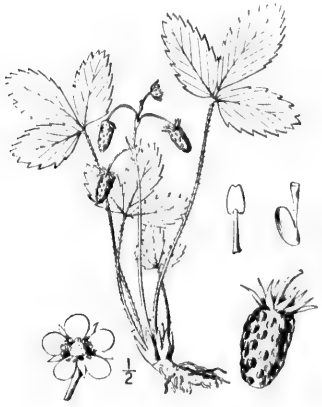
1. Fragaria Virginiàna Duchesne. Virginia or Scarlet Strawberry. (Fig. 1908.)

Fragaria Virginiana Duchesne, Hist. Nat. Fras. 204. 1766.

Fragaria Virginiana var. *Illinoensis* Prince; A. Gray, Man. Ed. 5, 155. 1867.

Rather stout, tufted, dark green, more or less villous-pubescent with spreading or sometimes appressed hairs. Petioles 2′–6′ long; leaflets thick, or even coriaceous, broadly oval or obovate, obtuse, dentate-serrate, the terminal one generally cuneate, the lateral inequilateral at the base; scape equalling or shorter than the leaves, the fruit being generally borne below them; hairs of the scape more or less spreading; calyx-lobes, at least of the sterile flowers, erect at maturity; fruit red, ovoid, the achenes imbedded in pits.

In dry soil, New Brunswick to South Dakota, south to Florida, Louisiana and Arizona. April–June.



2. Fragaria Canadénsis Michx. Northern Wild Strawberry. (Fig. 1909.)

Fragaria Canadensis Michx. Fl. Bor. Am. 1: 299. 1803.

Petioles slender, loosely villous, 4′–7′ high. Leaflets oblong or the middle one narrowly obovate, obtuse, rather few-toothed, 9″–2′ long, 5″–10″ wide, glabrous or nearly so above even when young, more or less appressed-pubescent beneath; scapes pubescent with appressed hairs; flowers few, slender-pedicelled, 7″–9″ broad; fruit oblong, or oblong-conic, 6″–8″ long; achenes sunken in pits.

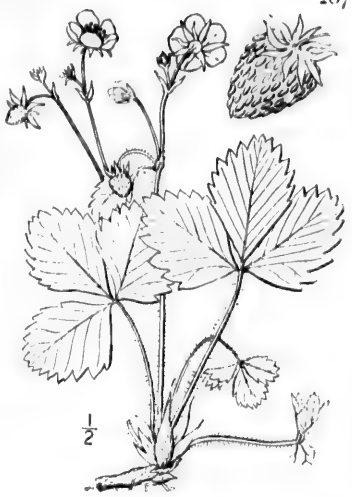
In fields and meadows, Newfoundland to the Northwest Territory, south to the Catskill Mountains. May–July.

3. Fragaria vésca L. European Wood Strawberry. (Fig. 1910.)

Fragaria vesca L. Sp. Pl. 494. 1753.

Stout, tufted, dark green, generally less villous than the two preceding species. Leaflets ovate or broadly oval, obtuse, dentate, broader but nearly or quite as thick, the terminal one cuneate, the others inequilateral at the base; scape commonly exceeding the leaves, so that the fruit is borne above them, sometimes 12′ high, its hairs mostly spreading; calyx-lobes remaining spreading or sometimes reflexed; fruit red, hemispheric or conic, the achenes borne on its smooth and nearly even surface.

In fields and along roadsides. Naturalized from Europe in the Eastern and Middle States. April-June.



4. Fragaria Americàna (Porter) Britton. American Wood Strawberry. (Fig. 1911.)

Fragaria vesca var. *Americana* Porter, Bull. Torr. Club, **17**: 15. 1890.

Fragaria Americana Britton, Bull. Torr. Club, **19**: 222. 1892.

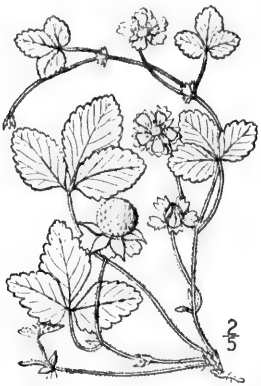
Slender, light green, loosely villous-pubescent or glabrate, producing runners more freely than any of the three preceding species. Leaflets thin, ovate or oval, obtuse or acute at the apex, sharply incised-dentate, the terminal one commonly cuneate, the others inequilateral at the base, pubescent with silvery appressed hairs beneath; flowers smaller than in *F. vesca*; calyx-lobes spreading or reflexed in fruit; fruit ovoid or elongated-conic, light red or pink, the achenes borne on its glabrous shining even surface and but slightly attached to it.

In rocky woods, Pennsylvania and New Jersey to Ontario and New Brunswick, west to Oregon. May-June.

8. DUCHÈSNEA J. E. Smith, Trans. Linn. Soc. **10**: 372. 1811.

Perennial herbs, with trailing branches often rooting at the nodes (leafy runners), 3-foliolate long-petioled leaves and axillary slender-peduncled yellow perfect flowers. Calyx 5-parted, 5-bracteolate, the bractlets larger than the calyx-segments and alternating with them, dentate or incised, often regarded like those in *Fragaria* and *Potentilla* as an exterior calyx. Petals 5, obovate. Stamens numerous. Pistils numerous, borne on a hemispheric receptacle which greatly enlarges but does not become pulpy in fruit. Achenes superficial on the receptacle. [In honor of A. N. Duchesne, French botanist.]

Two species, natives of southern Asia.



1. Duchesnea Índica (Andr.) Focke. Yellow or Indian Strawberry. (Fig. 1912.)

Fragaria Indica Andr. Bot. Rep. *pl. 479.* 1807.
Duchesnea Indica Focke, in Engl. & Prantl, Nat. Pfl. Fam. **3**: abt 3, 33. 1888.

Silky-pubescent, tufted and forming leafy runners, dark green. Leaflets obovate or broadly oval, rather thin, crenate or dentate, obtuse at the apex, rounded or narrowed at the base, the terminal one generally cuneate; peduncles equalling or longer than the leaves; flowers 6″–12″ broad; bractlets of the calyx dentate or incised, exceeding the ovate or lanceolate acuminate spreading calyx-lobes; fruit red, ovoid or globose, insipid.

In waste places, southern New York and Pennsylvania to Florida and Georgia. Naturalized or adventive from India. April–July.

9. POTENTÍLLA L. Sp. Pl. 495. 1753.*

Herbs or shrubs, with alternate stipulate digitately or pinnately compound leaves, and cymose or solitary yellow white or purple perfect flowers. Calyx persistent, its tube concave or hemispheric, 5-bracteolate (rarely 4-bracteolate), 5-lobed (rarely 4-lobed). Petals 5 or rarely 4, mostly obovate or orbicular, usually emarginate. Stamens ∞, seldom 5 or 10; filaments slender; anthers small. Carpels ∞, numerous, inserted on a dry, usually pubescent receptacle; style terminal, basal or lateral, deciduous. Seed pendulous or ascending. [Diminutive of *potens*, powerful, from the medicinal properties of some species.]

About 150 species, nearly all of them natives of the north temperate zone. Besides the following about 30 others occur in the western and northwestern parts of North America.

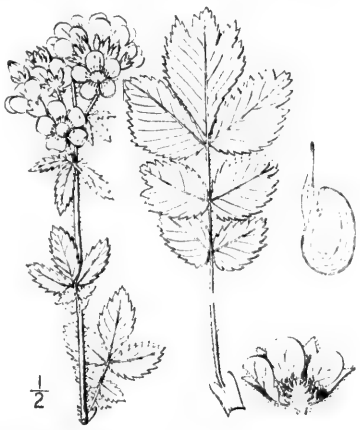
Flowers cymose, white; leaves pinnate; erect herb. — 1. *P. arguta.*
Flowers cymose, yellow; erect or ascending herbs.
- Leaves digitately 3–7-foliolate; leaflets dentate or incised.
  - Leaflets 5–7.
    - Leaves white-pubescent beneath. — 2. *P. argentea.*
    - Leaves green beneath.
      - Plant 3′–6′ high; leaflets obovate, 6″–8″ long; arctic. — 3. *P. rubens.*
      - Plants 1°–2° high; leaflets 1′–3′ long; introduced species.
        - Leaflets obovate; flowers 3″–4″ broad. — 4. *P. intermedia.*
        - Leaflets oblanceolate; flowers 6″–9″ broad. — 5. *P. recta.*
  - Leaflets 3 (or apparently 5 in no. 11).
    - Styles filiform; plants arctic or alpine.
      - Leaves white-pubescent beneath. — 6. *P. nivea.*
      - Leaves green beneath, often villous.
        - Flowers 5″–7″ broad.
          - Teeth of the leaflets acute; bractlets oblong. — 7. *P. emarginata.*
          - Teeth of the leaflets obtuse; bractlets oval. — 8. *P. nana.*
        - Flowers only 3″ broad. — 9. *P. Robbinsiana.*
    - Styles glandular-thickened below.
      - Plants stout, erect, rough-pubescent.
        - Stamens about 20. — 10. *P. Monspeliensis.*
        - Stamens 5–8; prairie species. — 11. *P. pentandra.*
      - Plant slender, often diffuse, villous. — 12. *P. leucocarpa.*
- Leaves pinnately 3–11-foliolate.
  - Leaves villous, or softly pubescent, rarely glabrate.
    - All 7–11-foliolate; inflorescence cymose. — 13. *P. paradoxa.*
    - Upper leaves 3-foliolate; inflorescence falsely racemose. — 14. *P. Nicolletii.*
  - Leaves white-tomentose on both sides.
    - Leaves mostly regularly pinnate; pubescence silky and tomentose. — 15. *P. Hippiana.*
    - Leaves mostly interruptedly pinnate; pubescence simply tomentose. — 16. *P. effusa.*
  - Leaves green above, white-tomentose beneath; leaflets pinnatifid.
    - Styles thickened at the base.
      - Plant erect; leaves 7–15-foliolate. — 17. *P. Pennsylvanica.*
      - Plant ascending or decumbent; leaves 5–7-foliolate, the leaflets approximate, or almost digitate. — 18. *P. litoralis.*
    - Styles not thickened; plant low, spreading; leaves 6–9-foliolate. — 19. *P. multifida.*

Flowers cymose or solitary, yellow; shrub with pinnate leaves. — 20. *P. fruticosa.*
Flowers cymose, white; plant low, shrubby; leaves 3-foliolate. — 21. *P. tridentata.*
Flowers solitary, axillary, yellow; creeping or ascending herbs.
- Leaves pinnate; leaflets 5–25, white-pubescent beneath. — 22. *P. Anserina.*
- Leaves digitate; leaflets 5–3, pubescent or glabrate.
  - Leaflets 5, rarely 3; petals and sepals 5. — 23. *P. Canadensis.*
  - Leaflets 3, rarely 5; petals and sepals 4, rarely 5. — 24. *P. nemoralis.*

* **Text revised by Mr. PER AXEL RYDBERG.**

1. Potentilla argùta Pursh. Tall, or Glandular Cinquefoil. (Fig. 1913.)

Potentilla arguta Pursh, Fl. Am. Sept. 736. 1814.
Geum agrimonioides Pursh, loc. cit. 351. Not *P. agrimonioides* Bieb. 1808.



Erect, stout, simple or little-branched above, glandular and villous-pubescent, 1°–4° high. Stipules membranous; basal leaves slender-petioled, pinnately 7–11-foliolate; leaflets ovate, oval or rhomboid, obtuse at the apex, the terminal one cuneate, the others rounded at the base and commonly oblique, all sharply incised-dentate; stem leaves short-petioled or sessile, with fewer leaflets; flowers white, densely cymose, terminal, numerous, short-pedicelled, 5″–7″ broad; calyx-lobes ovate, acute, shorter than the obovate petals; stamens 25–30, borne on the glandular disk; style nearly basal and fusiform, thickened; achenes glabrous.

On dry or rocky hills, New Brunswick to the Rocky Mountains, south to New Jersey, Illinois, and Kansas. June–July.

2. Potentilla argéntea L. Silvery or Hoary Cinquefoil. (Fig. 1914.)

Potentilla argentea L. Sp. Pl. 497. 1753.

Stems ascending, tufted, branched, slightly woody at the base, 4′–12′ long, white woolly-pubescent. Stipules lanceolate, acuminate; leaves all but the uppermost petioled, digitately 5-foliolate; leaflets oblanceolate or obovate, obtuse at the apex, cuneate at the base, green and glabrous above, white-pubescent beneath, laciniate or incised and with revolute margins, 6″–12″ long; flowers cymose, terminal, pedicelled, yellow, 2″–4″ broad; calyx-lobes ovate, acutish, a little shorter than the obovate retuse petals; stamens about 20; style filiform, terminal; achenes glabrous.

In dry soil, Nova Scotia and Ontario to Dakota, south to Washington, D. C., Indiana and Kansas. Also in Europe and Asia. May–Sept.

Potentilla collina Wibel, of Europe, collected at Winona, Minn., and Cambridge, Mass., differs in its more prostrate habit, broader and not revolute leaflets, and larger calyx.

3. Potentilla rùbens (Crantz) Vill. Northern Cinquefoil. (Fig. 1915.)

Fragaria rubens Crantz, Stirp. Aust. Ed. 2, 2: 75. 1769.
Potentilla maculata Pourr. Act. Toloss. 3: 326. 1788.
Potentilla Salisburgensis Haenke in Jacq. Coll. 2: 68. 1788.
Potentilla rubens Vill. Prosp. Fl. Dauph. 46. 1779.

Rootstock prostrate, stems ascending, simple, pubescent, 3′–8′ high. Stipules membranous; basal leaves slender-petioled, digitately 5-foliolate (rarely 3-foliolate); leaflets obovate, obtuse at the apex, narrowed or cuneate at the base, glabrous above, pubescent along the margins and on the veins beneath, green both sides, incisely dentate, 6″–9″ long; flowers few, terminal, loosely cymose, yellow, 6″–9″ broad; pedicels slender; petals obovate, obcordate, cuneate, yellow, orange-spotted at the base, longer than the ovate acutish calyx-lobes; stamens about 20; style filiform, terminal; achenes glabrous.

Labrador and Greenland to James Bay. Also in northern and alpine Europe. Summer.

4. Potentilla intermèdia L. Downy Cinquefoil. (Fig. 1916.)

Potentilla intermedia L. Mant. 1: 76. 1767.

Perennial, stem 1°–2½° high, usually ascending, leafy and much branched, finely pubescent with long hairs. Leaves green and finely hirsute on both sides, somewhat tomentose beneath, all but the uppermost 5-foliolate, the lower long-petioled; stipules narrow, acute, mostly entire; leaflets obovate or oblong, the teeth rather obtuse; flowers numerous, cymose, yellow, leafy-bracted; petals obcordate, equalling the triangular-ovate acute sepals and oblong bractlets; stamens about 20; style terminal, short, not thickened at the base.

Massachusetts, New York and New Jersey. Adventive from Europe. Resembles *P. Monspeliensis*, differing in its 5-foliolate leaves, and perennial root.

5. Potentilla récta L. Rough-fruited Cinquefoil. (Fig. 1917.)

Potentilla recta L. Sp. Pl. 497. 1753.
Potentilla pilosa Willd. Sp. Pl. 2: 1109. 1799.

Erect, rather stout, branched above, villous-pubescent, 1°–2° high. Stipules ovate-lanceolate, the lower foliaceous and laciniate; leaves digitately 5–7-foliolate, all but the uppermost petioled; leaflets oblanceolate or oblong-lanceolate, obtuse at the apex, narrowed or cuneate at the base, green both sides, sparingly pubescent with scattered hairs above, more pubescent beneath, incised-dentate, 1′–3′ long, with divergent teeth; flowers terminal, cymose, yellow, numerous, 6″–9″ broad; stamens about 20; style slender, terminal; carpels rugose.

In waste places, Ontario, New York, Virginia and Michigan. Adventive from Europe. Native also of Asia. June–Sept.

6. Potentilla nívea L. Snowy Cinquefoil. (Fig. 1918.)

Potentilla nivea L. Sp. Pl. 499. 1753.

Stems 2′–6′ high, woody at the base, ascending or erect, silky-villous, the flowering ones mostly simple. Stipules membranous, silky; leaves 3-foliolate (very rarely 5-foliolate), the lower petioled; leaflets obovate, oblong or oval, obtuse, incised-dentate or crenate, densely white-pubescent beneath, green and loosely villous above, 4″–8″ long, the terminal one generally cuneate, the others narrowed or rounded at the base; flowers 1–5, terminal, pedicelled, yellow, 5″–9″ broad; sepals silky, lanceolate, acute, shorter than the broadly obovate emarginate petals, longer than the bractlets; stamens about 20; style filiform, terminal; achenes glabrous.

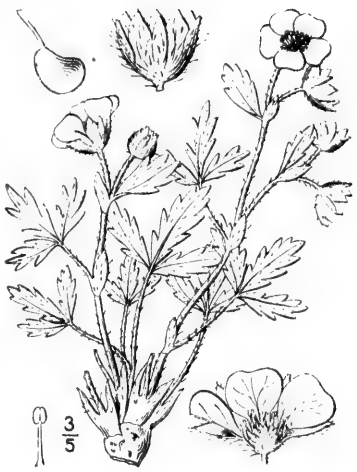
Labrador, Greenland and throughout arctic America to British Columbia, south in the Rocky Mountains to Utah and Colorado. Also in arctic and alpine Europe and Asia. Summer.

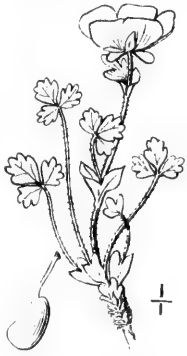
7. Potentilla emarginàta Pursh. Arctic Cinquefoil. (Fig. 1919.)

Potentilla emarginata Pursh, Fl. Am. Sept. 353. 1814.

Stems villous-pubescent, tufted, ascending or erect, 1′–4′ high. Stipules ovate or oblong, membranous, mostly obtuse, entire; leaves 3-foliolate, the basal slender-petioled; leaflets obovate, 2″–6″ long, incised-dentate with acute teeth, of which the terminal one is generally the largest, generally villous on both sides, the terminal one narrowed or cuneate, the others sometimes broad at the base; flower solitary, rarely 2, yellow, 5″–7″ broad; calyx-lobes ovate, obtuse, pilose, equalling the oblong bractlets, shorter than the obovate obcordate petals; stamens about 20; style terminal, filiform; achenes glabrous.

Labrador, Greenland and arctic America to Alaska. Also in eastern Siberia and Spitzbergen. Summer.





8. Potentilla nàna Willd. Low Cinquefoil. (Fig. 1920.)

Potentilla nana Willd.; Schlecht. Berl. Mag. 7: 296. 1813.

Villous-pubescent, stems 1′–2′ high, tufted, generally 1-flowered. Leaves 3-foliolate; stipules broadly ovate, scarious, brown; leaflets broadly obovate or orbicular, toothed, the teeth short, rounded, the terminal one often the smallest; petals broadly obcordate, exceeding the ovate acute sepals and the elliptic obtuse bractlets; otherwise resembling *P. emarginata*.

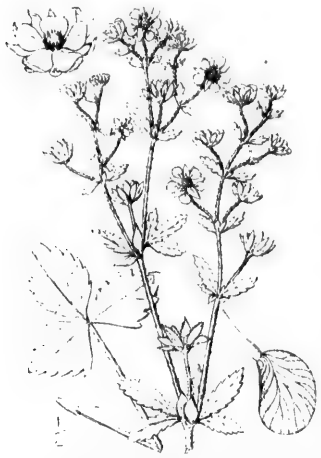
Labrador, Hudson Bay and arctic America to Alaska, south to the Canadian Rocky Mountains. Also in Siberia. Summer.

9. Potentilla Robbinsiàna Oakes. Robbins' Cinquefoil. (Fig. 1921.)

Potentilla Robbinsiana Oakes; T. & G. Fl. N. A. 1: 441. 1840.
Potentilla minima A. Gray, Man. 122. 1848.
P. frigida A. Gray, Man. Ed. 5, 154. 1867. Not Vill. 1789.

Depressed, ½′–2′ high, tufted from a thick woody base, villous-pubescent. Stipules ovate, obtusish, loosely villous; basal leaves petioled, 3-foliolate, those of the flowering stem sessile, small and 3-lobed; leaflets obovate, villous on both sides, and especially so beneath, 2″–4″ long, deeply 3–7-dentate above, cuneate or narrowed at the base, obtuse at the apex; flowers solitary, terminal, slender-petioled, yellow, about 3″ broad; sepals and bractlets nearly equal, obtuse, slightly shorter than the obcordate petals; stamens about 20; style terminal, filiform; achenes glabrous.

White Mountains of New Hampshire. Summer.



10. Potentilla Monspeliénsis L. Rough Cinquefoil. (Fig. 1922.)

Potentilla Monspeliensis L. Sp. Pl. 499. 1753.
Potentilla Norvegica L. Sp. Pl. 499. 1753.
Potentilla hirsuta Michx. Fl. Bor. Am. 1: 302. 1803.

Erect, stout, annual or biennial, branched above, hirsutely rough-pubescent, 6′–2½° high. Stipules foliaceous, lanceolate, incised-dentate or sometimes entire; leaves 3-foliolate, the lower and basal ones petioled, the upper sessile or nearly so; leaflets obovate, green both sides, obtuse at the apex, mostly narrowed at the base, pubescent with spreading hairs, 1′–2′ long; flowers yellow, terminal, usually rather densely cymose and leafy-bracted, 3″–6″ broad; calyx-lobes ovate, acute, pubescent, longer than the obovate retuse petals and somewhat broader than the bractlets; stamens 15–20; style glandular-thickened below, terminal; achenes glabrous, rugose or smooth.

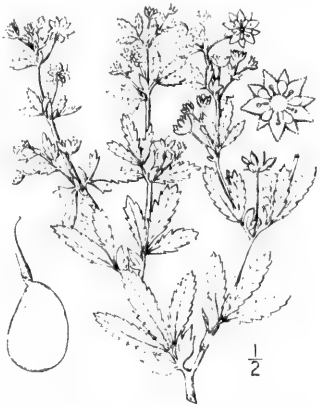
In dry soil, Labrador to South Carolina, west to Alaska and Kansas, south in the Rocky Mountains to Arizona. Also in Mexico, Europe and Asia. Often occurs as a weed in cultivated ground. June–Sept.

11. Potentilla pentándra Engelm. Five-stamened Cinquefoil. (Fig. 1923.)

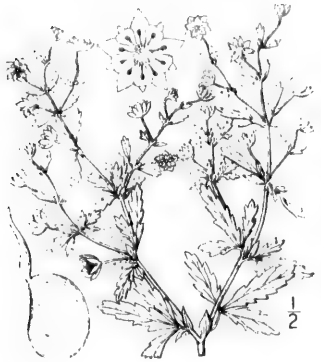
P. pentandra Engelm.; T. & G. Fl. N. A. 1: 447. 1840.
Potentilla rivalis var. *pentandra* S. Wats. Proc. Am. Acad. 8: 553. 1873.

Similar to the preceding species, erect, hirsute, 1°–4° high, simple at the base, much branched above. Stipules lanceolate, somewhat foliaceous, dentate or entire; basal and lower leaves slender-petioled, 3-foliolate, with the lower pair of leaflets parted nearly to the base, so as to appear 4- or 5-foliolate; leaflets oblanceolate or oblong, obtuse at the apex, narrowed or cuneate at the base, incised-dentate, glabrous or sparingly pubescent above, quite pubescent beneath, 1′–2′ long; flowers terminal, in a more or less flat-topped cyme, pale yellow, 2″–4″ broad; calyx-lobes ovate, acute, exceeding the small spatulate petals, and equalling or slightly shorter than the lanceolate bractlets; stamens 5–8; style thickened below, terminal; achenes glabrous.

Prairies, Manitoba to Missouri and Arkansas. June–Sept.



12. Potentilla leucocàrpa Rydberg. Diffuse Cinquefoil. (Fig. 1924.)



Potentilla millegrana Engelm.; Lehm. Ind. Sem. Hamb. 1849: Add. 12. 1849. Not Dougl. 1833.
Potentilla rivalis var. *millegrana* S. Wats. Proc. Am. Acad. 8: 553. 1873.

Decumbent or ascending, annual, usually weak and diffusely branched, 6′–3° high, softly villous-pubescent, or glabrate. Stipules ovate or ovate-lanceolate, entire or sparingly dentate; leaves all but the uppermost petioled, 3-foliolate; leaflets oblong, cuneate, thin, flaccid, more or less pubescent, incisely serrate, ½′–1½′ long; flowers terminal, leafy, loosely cymose, yellow, about 2″ broad; calyx-lobes ovate, acute, about equalling the lanceolate bractlets, exceeding the obovate petals; stamens about 10; style slightly thickened below, terminal; achenes small, glabrous.

In damp soil, Missouri to Minnesota, west to California and Washington. May–Sept.

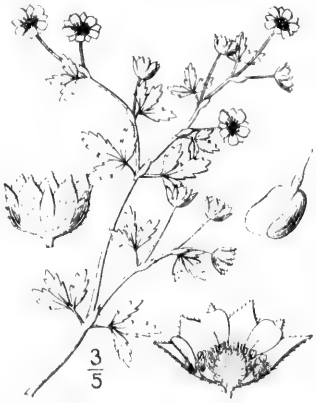
Potentilla rivàlis Nutt., a western species which may reach our limits, is distinguished from this by its usually pinnately 5-foliolate leaves, viscid pubescence, stricter erect habit, and more numerous stamens. It has been collected at the stockyards of Chicago.

13. Potentilla paradóxa Nutt. Bushy Cinquefoil. (Fig. 1925.)

P. paradoxa Nutt.: T. & G. Fl. N. A. 1: 437. 1840.
Potentilla supina Michx. Fl. Bor. Am. 1: 304. 1803. Not L. 1753.

Softly pubescent, annual or biennial, decumbent, ascending or nearly erect, rather stout, bushy, 1°–3° high. Stipules ovate-lanceolate, acute, mainly entire; leaves all but the uppermost petioled, pinnately 7–11-foliolate; leaflets obovate or oval, obtuse, 6″–12″ long, sparingly pubescent, narrowed or rounded at the base, crenate, the upper ones commonly confluent or decurrent on the rachis; flowers terminal, loosely cymose, leafy-bracted, yellow, 3″–5″ broad; petals obovate, cuneate, about equalling the ovate calyx-lobes and lanceolate bractlets; stamens about 20; style terminal, thickened below; achenes glabrous, strongly gibbous.

Shores of the Great Lakes from Presque Isle, Pennsylvania to Minnesota, south in the Mississippi Valley to Missouri, west to Oregon and New Mexico. Also in Mexico and Mantchuria. June–Sept.



14. Potentilla Nicollétii (S. Wats.) Sheldon. Nicollet's Cinquefoil. (Fig. 1926.)

Potentilla supina var. *Nicolletii* S. Wats. Proc. Am. Acad. 8: 553. 1873.
Potentilla Nicolletii Sheldon, Bull. Geol. Nat. Hist. Surv. Minn. 9: 16. 1894.

Similar to *P. paradoxa*, but more spreading and more branched; lower leaves only pinnate, with several leaflets; upper leaves 3-foliolate; teeth of the leaflets acute; inflorescence elongated, falsely racemose; stamens 10–15.

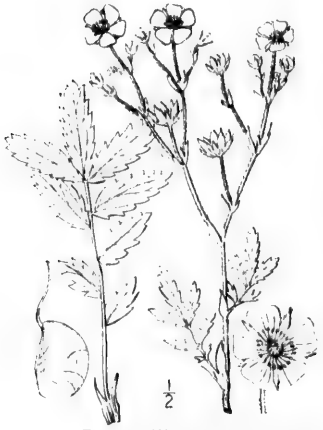
North Dakota, Minnesota, Iowa and Missouri.

15. Potentilla Hippiàna Lehm. Woolly Cinquefoil. (Fig. 1927.)

P. Hippiana Lehm. Nov. Stirp. Pug. 2: 7. 1830.
Potentilla leucophylla Torr. Ann. N. Y. Lyc. 2: 197. 1825. Not Pall. 1773.

Erect or ascending, perennial, branched above, rather stout, 1°–2½° high, densely floccose as well as silky. Stipules lanceolate, acuminate, entire; lower and basal leaves petioled, pinnately 5–11-foliolate; leaflets oblanceolate or oblong, obtuse, narrowed or cuneate at the base, 6″–18″ long, incisely dentate, very white beneath, the lower ones smaller than the upper, and no smaller ones interspersed; flowers terminal, yellow, loosely cymose, 3″–6″ broad; petals obovate, retuse, a little exceeding the lanceolate acute calyx-lobes and slightly narrower bractlets; stamens about 20; style filiform, terminal; achenes glabrous.

Dry soil, northwestern Minnesota and Assiniboia to British Columbia, south to Nebraska and New Mexico. June–Aug.



16. Potentilla effùsa Dougl. Branched Cinquefoil. (Fig. 1928.)

P. effusa Dougl.; Lehm. Nov. Stirp. Pug. 2: 8. 1830.

Closely related to *P. Hippiana* and perhaps a mere variety of it. Plant 6′–18′ high, diffusely branched above; leaves sometimes interruptedly pinnate, tomentose-canescent, but not silky; leaflets 5–11, oblong, obtuse at the apex, commonly cuneate at the base, incised dentate, ½′–1½′ long; flowers yellow, 3″–5″ broad, loosely cymose, yellow; bractlets shorter than the lanceolate acute calyx-lobes; petals obovate, emarginate, exceeding the calyx-lobes; stamens about 20; style terminal; achenes glabrous.

Prairies, western Minnesota (according to Upham) to Montana and Colorado. Summer.

17. Potentilla Pennsylvánica L. Prairie Cinquefoil. (Fig. 1929.)

Potentilla Pennsylvanica L. Mant. 76. 1767.

Stem generally erect, 15′–30′ high, tomentose. Stipules ovate, often much divided; leaves pinnately 5–15-foliolate, grayish tomentose beneath, glabrous above; leaflets oblong or oblanceolate, cleft halfway to the midrib into oblong lobes, margins scarcely revolute; cymes dense, the branches erect; petals yellow, obovate, truncate or slightly emarginate, about equalling the ovate triangular acute sepals and the lanceolate bractlets; stamens 20–25; style terminal, thickened below; achenes glabrous.

On prairies, Hudson Bay to the Canadian Rocky Mountains, south to New Mexico. Summer.

Potentilla Pennsylvánica bipinnatífida (Dougl.) T. & G. Fl. N. A. 1: 438. 1838.

Potentilla bipinnatifida Dougl.; Hook. Fl. Bor. Am. 1: 188. 1833.

Stem slenderer, leaflets divided nearly to the midrib into linear lobes, white-tomentose beneath, silky above; margins scarcely revolute. Hudson Bay to the Northwest Territory, Michigan and Colorado. Perhaps a distinct species.

Potentilla Pennsylvánica strigòsa Pursh, Fl. Am. Sept. 356. 1814.

Stem usually lower; pubescent with long villous hairs; leaflets with deep narrow divisions, margins revolute. Manitoba and the Northwest Territory to Kansas and New Mexico. Also in Siberia.

18. Potentilla littoràlis Rydberg. Coast Cinquefoil. (Fig. 1930.)

Potentilla littoralis Rydberg, Bull. Torr. Club, 23: 264. 1896.

Perennial, tufted, stems ascending or decumbent, branched above, 6′–2° high, appressed-silky or glabrate. Stipules ovate-lanceolate, cleft or entire, acute; basal and lower leaves petioled, pinnately 5–7-foliolate, the leaflets approximate or apparently digitate; leaflets oblanceolate or obovate, incised-pinnatifid into oblong obtuse segments, grayish-pubescent beneath, green and glabrate above, ½′–2½′ long; flowers yellow, cymose, 4″–5″ broad; petals obovate, equalling or slightly exceeding the ovate acute veined sepals and the lanceolate bractlets; stamens 20–25; style terminal, thickened below; achenes glabrous.

Coast of Newfoundland and Labrador to Quebec and New Hampshire. June–July.

19. Potentilla multifida L. Cut-leaved Cinquefoil. (Fig. 1931.)

Potentilla multifida L. Sp. Pl. 496. 1753.

Perennial, stems several or many from the caudex, low, ascending or spreading, appressed-silky. Stipules large, lanceolate, acuminate, scarious, brown; leaves pinnately 5–9-foliolate, grayish-tomentose beneath, glabrate above; leaflets finely divided to near the midrib into linear acute segments, with more or less revolute margins; petals yellow, a little exceeding the ovate-lanceolate acute sepals; stamens about 20; style terminal, short, not thickened at the base; achenes smooth, or slightly rugose.

Hudson Bay and the Northwest Territory. Also in arctic and alpine Europe and Asia. Summer.

20. Potentilla fruticòsa L. Shrubby Cinquefoil. (Fig. 1932.)

Potentilla fruticosa L. Sp. Pl. 495. 1753.

Shrubby, much branched, stems erect or ascending, very leafy, 6′–4° high, the bark shreddy. Stipules ovate-lanceolate, membranous, acute or acuminate, entire; leaflets 5–7, oblong, or somewhat oblanceolate, entire, acute or acutish at each end, 6″–12″ long, silky-pubescent, the margins revolute; flowers terminal, densely cymose, or solitary, bright yellow, 8″–15″ broad; petals nearly orbicular, exceeding the ovate calyx-lobes and bractlets; stamens 15–20; style lateral, filiform; achenes, disk and receptacle long-hairy.

In swamps or moist rocky places, Labrador and Greenland to Alaska, south to New Jersey, Illinois, Minnesota, in the Rocky Mountains to Arizona, and in the Sierra Nevada to California. Also in northern Europe and Asia. Called also Hardhack and Prairie Weed. A troublesome bushy weed in northern New England. June–Sept.

21. Potentilla tridentàta Soland. Three-toothed Cinquefoil. (Fig. 1933.)

Potentilla tridentata Soland. in Ait. Hort. Kew. 2: 216. 1789.

Tufted, woody at the base, much branched, branches erect, 1′–12′ high, pubescent with appressed hairs. Stipules lanceolate, entire; leaves mostly petioled, 3-foliolate; leaflets of the lower ones oblanceolate, 3-toothed or sometimes 2–5-toothed at the obtuse apex, cuneate at the base, coriaceous, dark green and shining above, pale and minutely pubescent beneath, ¼′–1′ long; upper leaflets linear or oblong, often acute and entire; flowers 1–6, in a terminal cyme, white, 3″–5″ broad; bractlets shorter and narrower than the ovate acute calyx-lobes, which are shorter than the obovate-oval petals; stamens about 20; style lateral, filiform; achenes and receptacle villous.

In rocky places, especially on mountains, Greenland to New Jersey, on the higher southern Alleghanies, shores of Lake Superior, and west to the Canadian Rocky Mountains. June–Aug.

22. Potentilla Anserina L. Silver-weed. Wild or Goose-tansy. (Fig. 1934.)

Potentilla Anserina L. Sp. Pl. 495. 1753.

Herbaceous, tufted, spreading by slender runners 1°–3° long. Stipules membranous; leaves petioled, pinnate, 3′–18′ long; leaflets 7–25, oblong, oblanceolate or obovate, obtuse, the lower generally smaller, often with still smaller ones interspersed, all sharply serrate, nearly glabrous above, white and silky-pubescent beneath; peduncles axillary, solitary, slender, erect, 1-flowered, about equalling the leaves; flower yellow, 8″–12″ broad; petals broadly oval or obovate, entire or emarginate, exceeding the ovate acute calyx-lobes and oval bractlets; stamens about 20; style filiform, lateral; receptacle villous; achenes glabrous.

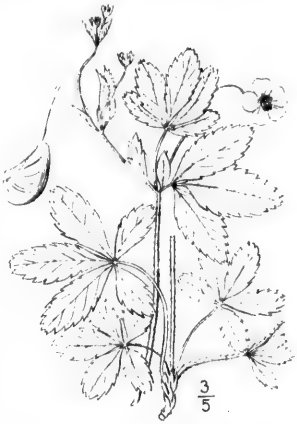
On shores and salt meadows, New Jersey to Greenland, west to Nebraska, British Columbia and Alaska, south in the Rocky Mountains to New Mexico and to California. Also in Europe and Asia. Goose-grass. May–Sept.

Potentilla Anserina Egèdii (Wormsk.) T. & G. Fl. N. A. 1: 444. 1840.

Potentilla Egedii Wormsk. Fl. Dan. *pl.* 1578.

Smaller, less pubescent, very slender; leaflets 5–9, deeply incised; peduncles short. Massachusetts to Greenland.

23. Potentilla Canadénsis L. Five-finger. (Fig. 1935.)



Potentilla Canadensis L. Sp. Pl. 498. 1753.
P. Canadensis var. *pumila* T. & G. Fl. N. A. 1: 443. 1840.
Potentilla simplex Michx. Fl. Bor. Am. 1: 303. 1803.

Herbaceous, tufted, spreading by slender runners, 3′–2° long. Stipules lanceolate, acute, entire or few-toothed; leaves petioled, digitately 5-foliolate (rarely 3–4-foliolate); leaflets oblanceolate or oblong, obtuse at the apex, narrowed at the base, 6″–1′ long, incisely serrate, at least above; peduncles slender, axillary, 1-flowered; flower yellow, 3″–7″ broad; petals 5, broadly oval, slightly longer than the acute calyx-lobes and linear-lanceolate bractlets; stamens about 20; style terminal, filiform; achenes glabrous; receptacle villous.

In dry soil, Quebec to Georgia, Minnesota and the Indian Territory. Ascends to 6300 ft. in North Carolina. April–Aug. Called also Wild Strawberry.

Potentilla réptans L., a European species, collected on ballast at Camden, N. J., differs in its more closely creeping habit, smaller leaves, and very broad elliptic bractlets.

24. Potentilla nemoràlis Nestl. Wood Cinquefoil. (Fig. 1936.)

Tormentilla reptans L. Sp. Pl. 500. 1753. Not *P. reptans* L.
Potentilla nemoralis Nestl. Mon. Pot. 65. 1816.

Diffusely branched, trailing or ascending, very slender, somewhat pubescent, 6′–2° long. Stipules small, foliaceous, entire or dentate; leaves petioled, 3-foliolate (rarely 5-foliolate); leaflets oblanceolate or obovate, obtuse at the apex, cuneate at the base, sharply dentate above; peduncles axillary, filiform, usually much exceeding the leaves, 1-flowered; flowers 3″–4″ broad, yellow, generally 4-parted; petals obovate, emarginate, or rounded, exceeding the acute calyx lobes and bractlets; achenes glabrous; receptacle pubescent.

Labrador (according to Hooker). Common in Europe. Called also Trailing Tormentil. Summer

10. CÓMARUM L. Sp. Pl. 502. 1753.

A stout dark green nearly glabrous herb, with alternate pinnate large-stipuled leaves, the large purple flowers cymose or solitary, terminal or also axillary. Calyx deeply 5-lobed, 5-bracteolate, the bractlets narrow. Petals shorter than the calyx-lobes, acute, purple. Stamens numerous, inserted on the large pubescent disk. Pistils numerous, inserted on the pubescent receptacle which becomes spongy in fruit. Style lateral. Achenes glabrous, 1-seeded. Seed pendulous. [Greek name of the Arbutus, from the similar fruits.]

A monotypic genus of the north temperate zone.

1. Comarum palústre L. Purple or Marsh Cinquefoil. Purple Marshlocks. Cowberry. (Fig. 1937.)

Comarum palustre L. Sp. Pl. 502. 1753.
Potentilla palustris Scop. Fl. Carn. Ed. 2, 1: 359. 1772.

Decumbent and somewhat woody at the base, the upper part of the stems pubescent. Leaves pinnate, the lower long-petioled, 5–7-foliolate; leaflets oblong or oval, sharply or incisely serrate, obtuse or acutish at the apex, narrowed at the base, 1′–3′ long; stipules membranous, sometimes adnate to the petiole for half its length; upper leaves nearly sessile 3–5-foliolate; flowers showy, 9″–15″ broad; calyx-lobes purple within, ovate, acuminate, much exceeding the ovate-lanceolate petals; bractlets much shorter than the calyx-lobes; disk lobed.

In swamps and peat-bogs, Labrador to New Jersey, Iowa, British Columbia and Alaska. Also in California, northern Europe and Asia. June–Aug.

11. SIBBÀLDIA L. Sp. Pl. 284. 1753.

Depressed alpine or arctic shrubby plants, with alternate mainly 3-foliolate stipulate leaves, and cymose flowers on scape-like nearly leafless peduncles. Calyx slightly concave, 5-lobed, 5-bracteolate, persistent. Petals 5, oblong or oval, much smaller than the calyx-lobes, yellow. Stamens 5, opposite the calyx-lobes, inserted on the margin of the villous-pubescent disk. Carpels 5–10, on short pubescent stipes; style lateral. Achenes 5–10, glabrous. [Named in honor of Robt. Sibbald, a Scotch naturalist.]

About 5 species, natives of the colder parts of the north temperate zone. The following is the only known American species.

1. Sibbaldia procúmbens L. Sibbaldia. (Fig. 1938.)

Sibbaldia procumbens L. Sp. Pl. 284. 1753.
Potentilla procumbens Clairv. Man. Herb. Suisse, 166. 1811.

Densely tufted, stem woody, decumbent or creeping, a few inches long. Stipules membranous, lanceolate or ovate-lanceolate, adnate; leaves 3-foliolate; petioles slender, 2′–4′ long; leaflets obovate or oblanceolate, cuneate at the base, 3–5-toothed at the apex, pubescent with scattered hairs on both sides, resembling in outline those of *Potentilla tridentata;* peduncles axillary, nearly naked, about equalling the leaves; flowers yellow, about 2½″ broad, numerous; petals oblong or oval, very small; calyx-lobes oblong-ovate, acute, longer and broader than the bractlets.

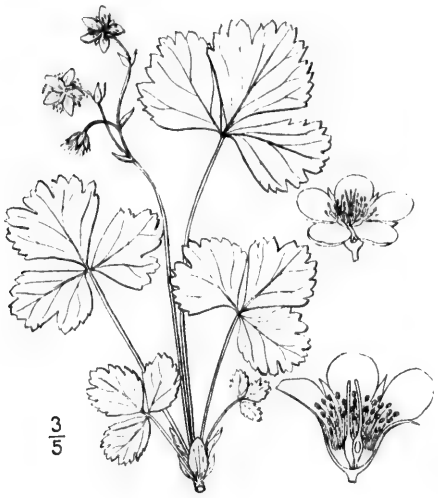
Summits of the White Mountains; Mt. Albert, Quebec; Labrador, Greenland, arctic America to Alaska, south in the Rocky Mountains to Utah. Also in arctic and alpine Europe and Asia. Summer.

12. WALDSTEÌNIA Willd. Neue Schr. Gesell. Nat. Fr. 2: 105. *pl. 4.* 1799.

Perennial herbs with the aspect of Strawberries, with alternate mainly basal long-petioled 3–5-foliolate or lobed leaves, membranous stipules, and yellow corymbose flowers on bracted scapes. Calyx persistent, the tube top-shaped, minutely 5-bracteolate or bractless at the summit, 5-lobed. Petals 5, obovate, longer than the calyx-lobes. Stamens ∞, inserted on the throat of the calyx; filaments rigid, persistent. Carpels 2–6, inserted on a short villous receptacle; style nearly terminal, deciduous, filiform. Achenes 2–6, obliquely obovoid, pubescent. Seed erect. [Named in honor of Franz Adam von Waldstein-Wartenburg, 1759–1823, a German botanist.]

Four known species, natives of the north temperate zone. Besides the following, another occurs in the southern Alleghanies.

1. Waldsteinia fragarioides (Michx.) Tratt. Barren or Dry Strawberry. (Fig. 1939.)



Dalibarda fragarioides Michx. Fl. Bor. Am. 1: 300. *pl. 28.* 1803.
Comaropsis fragarioides Nestl. Mon. Pot. 8. *pl. 1.* 1816.
Waldsteinia fragarioides Tratt. Ros. Mon. 3: 107. 1823.

Pubescent, or nearly glabrous, rootstock creeping, rather stout. Stipules ovate-lanceolate, acutish; leaves tufted, long-petioled, 3-foliolate (rarely 5-foliolate); leaflets obovate, obtuse at the apex, broadly cuneate at the base, dentate or crenate and sometimes incised, 1′–2′ long; scapes slender, erect, bracted, corymbosely 3–8-flowered; pedicels slender, often drooping; flowers yellow, 3″–5″ broad; achenes 4–6, finely pubescent; calyx-lobes ovate-lanceolate, acute.

Woods and shaded hillsides, northern New England and Ontario to Minnesota, Michigan, Indiana and along the Alleghanies to Georgia. May–June.

13. GÈUM L. Sp. Pl. 500. 1753.

Perennial herbs, with odd-pinnate or deeply pinnatifid, stipulate leaves, those of the base clustered, those of the stem commonly smaller. Flowers cymose-corymbose or solitary, yellow, white or purple. Calyx persistent, its tube obconic or hemispheric, usually 5-bracteolate, 5-lobed. Petals 5, orbicular, oblong or obovate, obtuse or emarginate, exceeding the calyx. Stamens ∞, inserted on a disk at the base of the calyx; filaments filiform. Carpels ∞, aggregated on a short receptacle. Style filiform, straight or jointed, persistent, sometimes plumose in fruit. Seed erect, its testa membranous. [The ancient Latin name.]

About 40 species, most abundant in the north temperate zone, a few in southern South America, 1 in South Africa. Besides the following, about 5 others occur in western North America.

Calyx-lobes erect or spreading.
  Leaflets 1–9, dentate or lobed, unequal in size; style plumose below, short.
    Flowers purple, nodding. 1. *G. rivale.*
    Flowers yellow, erect. 2. *G. radiatum.*
  Leaflets very numerous, incised; flowers light purple; style plumose throughout, elongated. 3. *G. ciliatum.*

Calyx-lobes strongly reflexed.
  Flowers yellow, 2″ broad; head of fruit stalked; calyx bractless. 4. *G. vernum.*
  Flowers white, or yellow, 4″–10″ broad; head of fruit sessile; calyx bracteolate.
    Flowers white, or very nearly so, 4″–8″ broad; stipules small.
      Plant softly-pubescent or glabrate; receptacle bristly. 5. *G. Canadense.*
      Plant rough-pubescent; receptacle nearly glabrous. 6. *G. Virginianum.*
    Flowers cream-yellow, 3″ broad, stipules large. 7. *G. flavum.*
    Flowers yellow, 5″–10″ broad; stipules large, dentate.
      Plant bristly; terminal leaflet very large, cordate. 8. *G. macrophyllum.*
      Plant pubescent; terminal leaflet ovate or cuneate. 9. *G. strictum.*

1. Geum rivàle L. Purple or Water Avens. (Fig. 1940.)

Geum rivale L. Sp. Pl. 501. 1753.

Erect, simple or nearly so, pubescent, 1°–3° high. Basal leaves lyrately and interruptedly pinnate, petioled, the lateral segments generally few and small, the terminal 1–3, much larger, all sharply and irregularly lobed and dentate; stem-leaves distant, short-petioled or sessile, simple, or 3-foliolate; flowers few, terminal, purple, nodding, 9″–12″ broad; petals obovate, emarginate, abruptly narrowed into a claw; calyx-lobes spreading, purple; head of fruit stalked in the calyx; achenes very pubescent; style jointed, plumose below, 3″–4″ long.

In swamps and low grounds, Newfoundland to British Columbia, New Jersey, Pennsylvania, Missouri and Colorado. Also in northern Europe and Asia. May–July.

2. Geum radiàtum Michx. Yellow Mountain Avens. (Fig. 1941.)

Geum radiatum Michx. Fl. Bor. Amer. 1: 300. 1803.
Geum Peckii Pursh, Fl. Am. Sept. 352. 1814.
Geum radiatum var. *Peckii* A. Gray, Man. Ed. 2, 117. 1856.

Pubescent with spreading hairs, or glabrate, stem 6′–2° high, erect, simple, 1-8-flowered at the summit. Basal leaves tufted, petioled, lyrately pinnate, the terminal segment very large, reniform-orbicular, sharply and irregularly dentate and slightly 3–5-lobed, 3′–6′ broad; lateral leaflets few or none; flowers yellow, 6″–12″ broad; bractlets of the calyx much shorter than the erect lanceolate calyx-lobes; petals obovate, often emarginate, spreading; style filiform, plumose below, naked above, 6″–8″ long, not jointed.

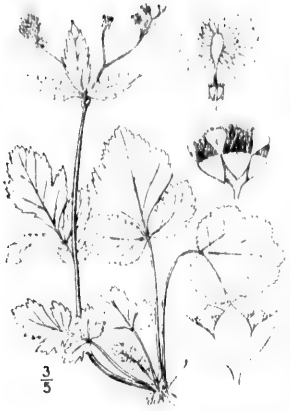
White Mountains of New Hampshire; Mt. Kineo, Maine, and on the high mountains of North Carolina. July–Aug.

3. Geum ciliàtum Pursh. Long-plumed Purple Avens. (Fig. 1942.)

Geum ciliatum Pursh, Fl. Am. Sept. 352. 1814.
Geum triflorum Pursh, loc. cit. 736. 1814.

Softly pubescent with short or spreading hairs, scapose; scape 6′–18′ high, simple, 3–8-flowered at the summit. Basal leaves tufted, petioled, interruptedly pinnate with many small leaflets interspersed among the obovate or oval laciniate numerous larger ones; leaves of the scape 2 opposite small sessile pairs, the elongated peduncles commonly bearing another similar pair; flowers light purple, 6″–9″ broad; bractlets linear, slightly exceeding the purple lanceolate acute erect calyx-lobes; head of fruit sessile; style filiform, 1′–2′ long and strongly plumose throughout in fruit, not jointed.

In dry or rocky soil, Labrador, northern New England and New York to British Columbia, south to Missouri, and in the Rocky Mountains to Arizona. May–July.



4. Geum vérnum (Raf.) T. & G. Spring Avens. (Fig. 1943.)

Stylipus vernus Raf. Neog. 3. 1825.
Geum vernum T. & G. Fl. N. A. 1: 422. 1840.

Erect or ascending, slender, pubescent with spreading hairs, or glabrate, simple or nearly so, 6′–2° high. Basal leaves tufted, petioled, with a single orbicular-reniform dentate 3–5-lobed leaflet, or pinnate with 3–7 obovate or oval more or less dentate and lobed ones; stem-leaves few, sessile or short-petioled, pinnate or pinnatifid; flowers few, terminal, corymbose or racemose, erect, yellow, about 2″ broad; calyx-lobes ovate, acute, reflexed; bractlets none; petals spreading; head of fruit stalked; style glabrous, jointed, about 2″ long; receptacle glabrous.

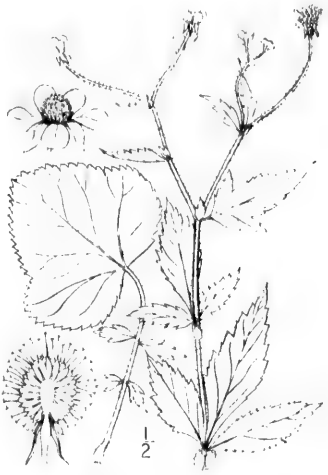
Shaded places, Ontario to West Virginia and Tennessee, west to Illinois and Texas. Naturalized from the West in New Jersey and southern New York. April–June.

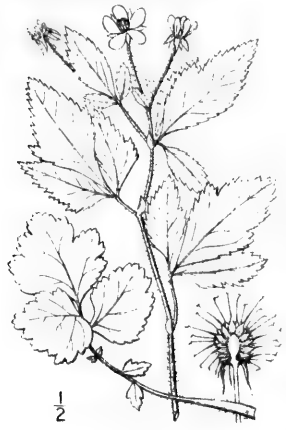
5. Geum Canadénse Jacq. White Avens. (Fig. 1944.)

Geum Canadense Jacq. Hort. Vind. 2: 82. *pl. 175.* 1772.
Geum Carolinianum Walt. Fl. Car. 150. 1788.
Geum album Gmel. Syst. 2: 861. 1791.

Softly and finely pubescent or glabrate, erect, branched above, 1½°–2½° high. Stipules small, dentate; basal leaves petioled, lobed, 3-foliolate or pinnately divided, their segments 3–5, the terminal one broadly ovate or obovate, the lateral ones narrower, all dentate and more or less lobed, sometimes with smaller ones borne on the petiole; stem-leaves short-petioled or sessile, 3–5-lobed or divided; peduncles slender; flowers white, 4″–8″ broad; calyx-lobes lanceolate, reflexed; petals obovate, equalling or shorter than the sepals; head of fruit globose-obovoid, sessile, 4″–6″ long; receptacle densely short-bristly; style glabrous, or pubescent below, jointed, 3″–4″ long.

In shaded places, Nova Scotia to Georgia, west to Minnesota and Missouri. June–Aug.





6. Geum Virginiànum L. Rough Avens. (Fig. 1945.)

Geum Virginianum L. Sp. Pl. 500. 1753.

Resembling the preceeding species but much stouter, the stem and petioles bristly-pubescent, the stout short peduncles pubescent with reflexed hairs. Sepals reflexed, exceeding the spreading revolute creamy-white petals; head of fruit globose, very dense, 6″–8″ in diameter; receptacle merely downy or glabrous; style slender, jointed, pubescent below, 4″–5″ long.

Low ground, New Brunswick to Pennsylvania and southward in the Alleghanies, west through Ontario to Minnesota and to Missouri. Blooms somewhat earlier than *G. Canadense*. Basal leaves becoming very large, the terminal leaflet sometimes 6′ wide. May–July.

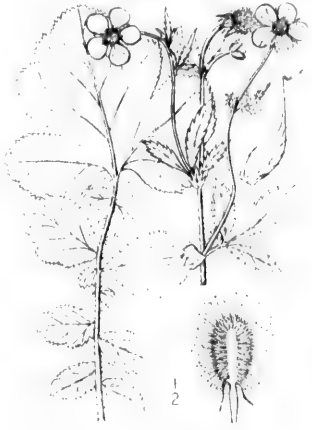
7. Geum flàvum (Porter) Bicknell. Cream-colored Avens. (Fig. 1946.)

Geum album var. *flavum* Porter, Bull. Torr. Club, **16**: 21. 1889.
Geum Canadense var. *flavum* Britton, Bull. Torr. Club, **18**: 270. 1891.
G. flavum Bicknell, Bull. Torr. Club, **23**: 523. 1896.

Stem bristly-hairy below, erect, 1½°–3° tall. Stipules large, often 1′ long, foliaceous, dentate or lobed. Basal leaves mostly pinnately divided, sometimes only lobed; lowe. stem-leaves usually also pinnately divided, the terminal segment often elongated; upper stem-leaves oval or lanceolate, sometimes entire; peduncles slender; flowers cream-yellow, about 3″ broad; petals narrowly oblong, shorter than or little exceeding the reflexed calyx-lobes; head of fruit sessile, about 5″ in diameter; receptacle bristly-villous; style nearly glabrous to the base, jointed, 3″–4″ long.

In woods, New York to Virginia. June–Aug.

Geum urbànum L., from Europe, distinguished by its bright yellow, broader and longer petals, is escaped from cultivation at Cambridge, Mass.



8. Geum macrophýllum Willd. Large-leaved Avens. (Fig. 1947.)

Geum macrophyllum Willd. Enum. 557. 1809.

Stout, erect, bristly-pubescent, simple or branched above, 1°–3° high. Stipules broad, foliaceous; basal leaves petioled, lyrate-pinnate, the terminal segment much the largest, reniform, orbicular or cordate, dentate, 3–7-lobed; lateral leaflets 3–6, oval or obovate, with smaller ones interspersed or borne on the petiole; stem-leaves short-petioled or sessile, the leaflets or lobes 2–4, cuneate; flowers several, terminal, short-peduncled, yellow, 5″–10″ broad; petals obovate, exceeding the acute reflexed calyx-lobes; receptacle nearly glabrous; style slender, jointed, pubescent, at least below, 3″–5″ long.

In low grounds, Nova Scotia and New England to Alaska and British Columbia, south to New York, Missouri, Colorado and Oregon. Also in northern Europe. May–July.

9. Geum strictum Ait. Yellow Avens. (Fig. 1948.)

Geum strictum Ait. Hort. Kew. **2**: 217. 1789.
Geum Canadense Murr. Comm. Goett. **5**: 34. *pl. 4. f. B.* 1783. Not Jacq. 1772.

Erect or ascending, pubescent, branched above, 2°–5° high. Stipules broad, foliaceous; basal leaves lyrate-pinnate; leaflets 5–7, obovate, cuneate, dentate or lobed, with a few smaller ones interspersed, the terminal one largest, broadly ovate or cuneate; stem-leaves sessile or short-petioled, with 3–5 ovate or oblong acute segments; flowers yellow, similar to those of the preceding species; receptacle downy-pubescent; style slender, 3″–4″ long, jointed, pubescent below.

In swamps or low grounds, Newfoundland to British Columbia, south to New Jersey, Pennsylvania, Missouri and Arizona. Also in northern Europe and Asia. June–Aug. A hybrid with *G. Canadense* has been found in eastern Pennsylvania.

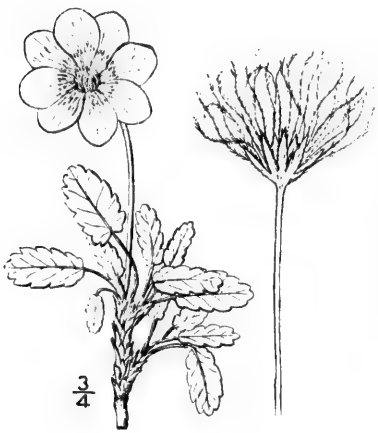
14. DRÝAS L. Sp. Pl. 501. 1753.

Low tufted herbaceous shrubs, with simple petioled stipulate leaves white-canescent beneath, and white or yellow, rather large perfect solitary flowers on slender scapes. Calyx persistent, not bracted, its tube concave, glandular-hirsute, 8–9-lobed. Petals 8 or 9, obovate, larger than the calyx-lobes. Stamens ∞, inserted on the throat of the calyx; filaments subulate. Carpels ∞, sessile, inserted on the dry receptacle; style terminal, persistent, elongated and plumose in fruit. Seed ascending, its testa membranous. [Name Latin, a wood-nymph.]

Three species, natives of the cold-temperate and arctic parts of the north temperate zone.

Flowers white; sepals linear.
Leaves oval or ovate, coarsely crenate. 1. *D. octopetala.*
Leaves ovate, or ovate-lanceolate, subcordate, entire or nearly so. 2. *D. integrifolia.*
Flowers yellow; sepals ovate; leaves crenate. 3. *D. Drummondii.*

1. Dryas octopétala L. White Mountain Avens. (Fig. 1949.)



Dryas octopetala L. Sp. Pl. 501. 1753.

Dryas chamaedrifolia Pers. Syn. 2: 57. 1807.

Stems prostrate, woody at the base, branched, 3′–6′ long. Stipules linear, adnate to the petiole; leaves oval or ovate, coarsely crenate all around, green and glabrous above, densely white-canescent beneath, generally obtuse at each end, ½′–1′ long; scape terminal, erect, 1′–5′ long, pubescent; flower white, about 1′ broad; sepals linear, acute or acutish, glandular-pubescent, persistent; style about 1′ long, plumose and conspicuous in fruit.

Labrabor and Greenland and throughout arctic America, south in the Rocky Mountains to Utah. Also in arctic and alpine Europe and Asia. June–Aug.

2. Dryas integrifòlia Vahl. Entire-leaved Mountain Avens. (Fig. 1950.)

Dryas integrifolia Vahl, Act. Havn. 4: Part 2, 171. 1798.

Dryas tenella Pursh, Fl. Am. Sept. 350. 1814.

Similar to the preceding species, but the leaves are ovate or ovate-lanceolate, obtuse and often subcordate at the base, obtusish at the apex, entire or with 1 or 2 teeth near the base, the margins strongly revolute; flowers white, generally slightly smaller; sepals linear.

"White Hills of New Hampshire," collected by Prof. Peck, according to Pursh; Anticosti, Labrador, west through arctic America to Alaska, and in Greenland. June–Aug.

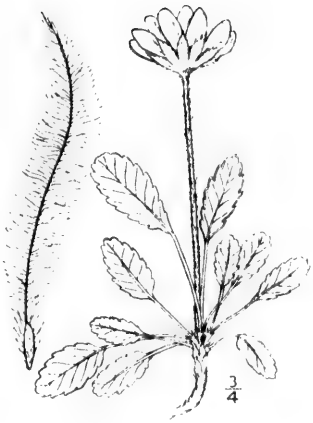
3. Dryas Drummóndii Richards.
Drummond's Mountain Avens.
(Fig. 1951.)

Dryas Drummondii Richards.; Hook. Bot. Mag. *pl.* 2972. 1830.

Dryas octopetala var. *Drummondii* S. Wats. Bibliog. Index, 1: 281. 1878.

Similar to *D. octopetala*, the leaves crenate-dentate, but generally narrowed at the base. Scape floccose-pubescent, often taller; flower yellow, about 9″ broad; sepals ovate, acutish, black glandular-pubescent.

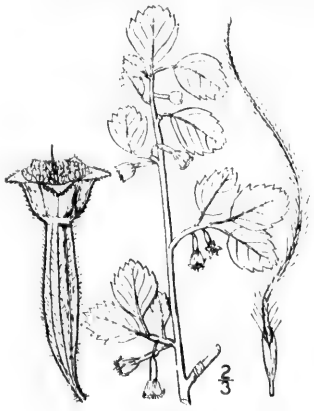
On gravel, Gaspé, Quebec; Anticosti and Labrador, throughout arctic America, and in the Canadian Rocky Mountains. June–Aug.



15. CERCOCÀRPUS H.B.K. Nov. Gen. et Sp. 6: 232. 1823.

Shrubs or small trees, with alternate simple petioled coriaceous dentate or entire, stipulate, prominently straight-veined leaves, and short-pedicelled or sessile, solitary or clustered, axillary or terminal, perfect flowers. Calyx narrowly tubular, persistent, contracted at the throat, 5-lobed. Petals none. Stamens 15–25, inserted in 2 or 3 rows on the limb of the calyx; filaments very short; anthers oval, often pubescent. Ovary 1, terete, slender, included in the calyx-tube, ripening into a villous achene; style filiform, villous, persistent, plumose and elongated in fruit; stigma obtuse; ovule solitary, nearly erect. Seed linear, its testa membranous. [Greek, tailed-fruit.]

About 6 species, natives of western North America and Mexico.



1. Cercocarpus parvifòlius H. & A.
Small-leaved Cercocarpus. (Fig. 1952.)

Cercocarpus parvifolius H. & A. Bot. Beechey Voy. 337. 1841.

A low branching shrub. Leaves obovate or oval, coriaceous, obtuse at the apex, cuneate or sometimes rounded at the base, short-petioled, dentate, silky-pubescent or canescent below, sparingly so or glabrous above, 6″–12″ long, 3″–8″ broad; flowers axillary, solitary or in pairs, short-peduncled, recurved, about 3″ broad; calyx-tube pubescent, 4″–6″ long, its limb deciduous; style becoming 2′–4′ long and very plumose in fruit.

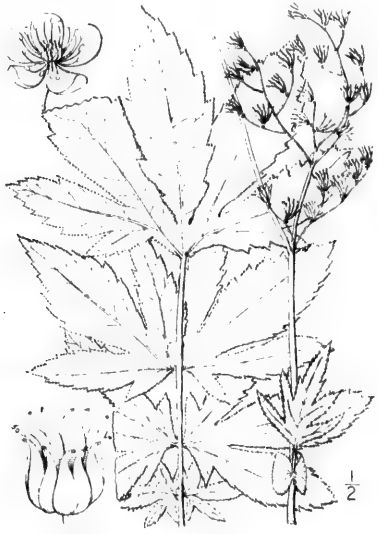
In dry or rocky soil, South Dakota and western Kansas to northern Mexico, west to California. April–June.

16. ULMÀRIA Hill. Hort. Kew. 213. 1769.

Tall perennial herbs, with alternate petioled pinnately divided stipulate leaves, and small white pink or purple perfect flowers in large cymose panicles. Calyx 5-lobed. Petals 5, clawed. Stamens numerous, inserted on the flat or slightly concave receptacle; filaments narrowed at the base. Pistils about 10 (5–15), distinct; ovary 2-ovuled. Ripe carpels capsular, indehiscent, 1-seeded. Seed pendulous. [Named from the fancied resemblance of the leaf-segments to those of *Ulmus*, the Elm.]

About 9 species, natives of the north temperate zone.

Lateral leaflets palmately 3–5-lobed; flowers pink or purple. 1. *U. rubra.*
Lateral leaflets merely serrate, or slightly lobed; flowers yellowish-white. 2. *U. Ulmaria.*



1. **Ulmaria rùbra** Hill. Queen-of-the-Prairie. (Fig. 1953.)

Ulmaria rubra Hill, Hort. Kew. 214. *pl. 7.* 1769.

Spiraea lobata Gronov.; Jacq. Hort. Vind. 1: 38. *pl. 88.* 1770.

Spiraea rubra Britton, Bull. Torr. Club, 18: 270. 1891.

Glabrous, stem branched, grooved, 2°–8° tall. Leaves large, the lower sometimes 3° long, pinnately 3–7-foliolate, commonly with smaller leaf-segments interposed or borne on the petiole; lateral leaflets sessile, opposite, palmately 3–5-lobed or 3–5-parted, the lobes acute, unequally serrate or incised; terminal leaflet larger, 7–9-parted; stipules serrate, persistent, 4″–8″ long; flowers pink or purple, fragrant, about 4″ broad; capsules glabrous.

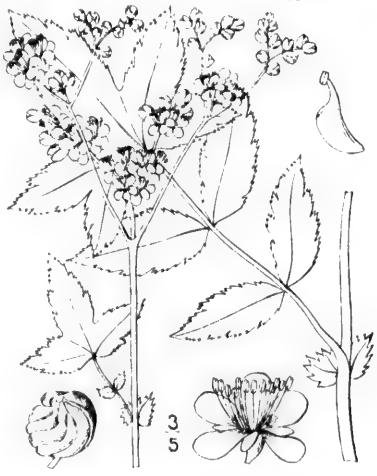
In moist grounds and on prairies, western Pennsylvania to Illinois and Michigan, south to Georgia, Kentucky and Iowa. Escaped from gardens farther east. June–July.

2. **Ulmaria Ulmària** (L.) Barnhart. Meadow-sweet or Meadow-Queen. Honey-sweet. (Fig. 1954.)

Spiraea Ulmaria L. Sp. Pl. 490. 1753.
Ulmaria palustris Moench, Meth. 663. 1794.
Ulmaria Ulmaria Barnhart, Bull. Torr. Club. 21: 491. 1894.

Stem branched, angular or grooved, 2°–4° tall. Leaves pinnately 3–9-foliolate, densely and finely white-downy beneath, green above, or in some forms green on both sides, sometimes with several or numerous much smaller leaf-segments interposed between the leaflets or borne on the petiole; lateral leaflets sessile, opposite, ovate or ovate-lanceolate, acute or acuminate, serrate or sometimes slightly lobed, the terminal one larger and deeply 3–5 lobed, the lobes acute and serrate; stipules about ½′ long; flowers yellowish-white, fragrant.

Escaped from gardens, Quebec to Massachusetts. Native of Europe and Asia. June–Aug. Called also Mead-sweet and Meadow-wort; this and *Spiraea salicifolia*, also called Bride-wort.



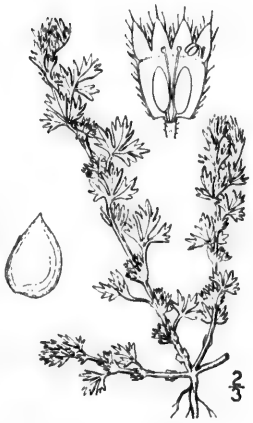
17. ALCHEMÍLLA L. Sp. Pl. 123. 1753.

Annual or perennial herbs, with alternate lobed or digitately compound leaves, aduate stipules, and small perfect greenish corymbose or capitate flowers. Calyx persistent, cup-shaped, contracted at the throat, 4–5-lobed, 4–5-bractcolate. Petals none. Stamens 1–4; filaments short. Carpels 1–4; style basal or lateral, slender. Achenes 1–4, enclosed in the calyx-tube. Seed ascending, its testa membranous. [Name from its fancied value in alchemy.]

About 35 species, natives of the Old World and of western America from British Columbia to Chili, very abundant in the higher Andes. The two following species of our area are introduced from Europe.

Annual; flowers in sessile axillary clusters; leaves small. 1. *A. arvensis.*
Perennial; flowers in compound terminal corymbs; leaves large. 2. *A. vulgaris.*

1. Alchemilla arvénsis (L.) Scop. Parsley-Piert, or Field Lady's Mantle. Argentill. (Fig. 1955.)



Aphanes arvensis L. Sp. Pl. 123. 1753.

Alchemilla arvensis Scop. Fl. Carn. Ed. 2, 1: 115. 1770.

Annual, softly pubescent, branching at the base, the branches usually slender, ascending, 1′–6′ high. Stipules toothed or rarely entire; leaves very short-petioled, pubescent, fan-shaped, 2″–5″ long, deeply 3-parted, the lobes cuneate, 2–4-cleft, the segments obtuse or acutish; flowers 1″–1½″ broad, in sessile axillary clusters partly enclosed by the stipules: calyx-lobes usually 4, ovate, obtusish.

In dry fields, Virginia, Tennessee, North Carolina, and in Nova Scotia. Also on the Pacific coast. Naturalized or adventive from Europe. Called also Breakstone, Parsley-vlix, Parsley Breakstone, and Firegrass. April–Sept.

2. Alchemilla vulgàris L. Lady's Mantle. Dew-cup. (Fig. 1956.)

Alchemilla vulgaris L. Sp. Pl. 123. 1753.

Perennial from a thick woody rootstock, branched, ascending or erect, pubescent or glabrate. Stipules mostly toothed; leaves orbicular-reniform, 5–9-lobed, more or less pubescent, the lower slender-petioled, the upper sessile or nearly so, lobes broad, not deep, serrate; flowers about 2″ broad, very numerous in terminal and axillary peduncled often leafy corymbs; calyx-lobes usually 4, ovate, acutish.

In grassy places near the coast, Nova Scotia, Cape Breton, Labrador and Greenland. Naturalized from Europe. Called also Duck's-foot, Padelion or Lion's-foot. May–Sept.

Alchemilla alpina L., reported by Pursh from the White and the Green Mountains, a native of alpine and northern Europe and Asia, is distinguished from the preceding by its 5 oblong silky entire leaflets.

18. AGRIMÒNIA L. Sp. Pl. 448. 1753.*

Perennial erect herbs, often glandular. Leaves alternate, petioled, odd-pinnate, with smaller leaf-segments interposed between the larger ones, and conspicuous stipules. Flowers small, regular, perfect, yellow, in narrow spicate racemes. Calyx-tube in fruit obconic, hemispheric or turbinate, often grooved, uncinate-bristly above, somewhat constricted at the throat, the 5 lobes connivent. Petals 5, small. Stamens 5–15, slender. Carpels 2, included; style terminal; stigma 2-lobed; ovules pendulous. Fruit dry, mostly reflexed; achenes 1–2, oblong. Seed suspended, its testa membranous. [Ancient Latin name.]

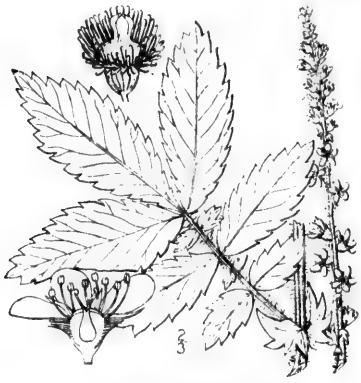
About 15 species, natives of the north temperate zone and the Andes of South America. Besides the following, another occurs in the Southern States.

Racemes and leaves beneath with loose spreading hairs or glabrous.
- Roots not tuberous; fruit large, turbinate, with numerous radiating bristles. 1. *A. hirsuta.*
- Roots tuberous; fruit very small, hemispheric, with few ascending or erect bristles. 2. *A. striata.*

Racemes and leaves beneath closely or softly pubescent.
- Roots tuberous; stems pubescent; leaves not glandular-dotted beneath.
  - Small, often simple, with elongated terminal raceme; leaflets 3–5. 3. *A. pumila.*
  - Larger, paniculate-branched; leaflets 5–11. 4. *A. mollis.*
- Roots not tuberous; stems hirsute; leaves glandular-dotted beneath.
  - Leaflets mostly 7–9; fruit large, the bristles connivent. 5. *A. Britloniana.*
  - Leaflets mostly 11–17; fruit small, the bristles radiate. 6. *A. parviflora.*

*Text contributed by MR. EUGENE P. BICKNELL.

1. Agrimonia hirsùta (Muhl.) Bicknell. Tall Hairy Agrimony. (Fig. 1957.)



A. Eupatoria hirsuta Muhl. Cat. 47. 1813.
Agrimonia hirsuta Bicknell, Bull. Torr. Club, 23: 509. 1896.

Mostly 3°–4° tall (2°–6°), minutely glandular, villous. Leaves large; leaflets thin, bright green, mostly 7, spreading, elliptic to broadly oblong, or the odd one obovate, apex acute, base often subcordate, coarsely serrate, the margins and nerves beneath ciliate, the lower surface rarely pubescent; interposed leaf-segments ovate, mostly 3 pairs; stipules broad, coarsely cut-toothed; flowers 4″–6″ broad, the buds ovoid, acute; fruit reflexed, 3″ long, short-turbinate, abruptly contracted at the pedicel, the disk convex, the dilated marginal rim bearing numerous reflexed spreading and erect bristles.

Woods and thickets, New Brunswick to Minnesota, North Carolina and California. Roots fibrous. June–Aug. The European *A. Eupatoria* L. differs markedly in foliage and fruit from any of our species.

2. Agrimonia striàta Michx. Woodland Agrimony. (Fig. 1958.)

A. striata Michx. Fl. Bor. Am. 1: 278. 1803.
Agrimonia parviflora DC. Prodr. 2: 587. 1821. Not Soland. 1780.
A. microcarpa Wallr. Beitr. Bot. 1: 39. *pl. 1. f. 3.* 1842.
Agrimonia rostellata Wallr. Beitr. Bot. 1: 42. 1842.

Mostly about 2° high (1°–5°), minutely glandular, simple or delicately paniculately branched; racemes filiform short, loosely flowered. Roots tuberous. Stem glabrous, or with scattered hairs above; leaflets thin, commonly 5, mostly oblong or obovate-oblong and obtuse, crenate or dentate, often cuneate, scarcely ciliate; interposed leaf-segments usually a small entire pair; stipules small, entire and lanceolate, or ovate and laciniate; flowers 2″–2½″ broad, the buds subglobose, truncate or nearly so; fruit 2″ high or less, spreading or nodding, hemispheric, the furrows shallow or obsolete; disk very tumid, its rim unmargined, its bristles short and weak, erect or ascending.

In dry woods, Connecticut to Virginia and Missouri. July–Sept.

3. Agrimonia pùmila Muhl. Small-fruited Agrimony. (Fig. 1959.)

Agrimonia pumila Muhl. Cat. 47. 1813.

Small and slender, 1°–2° high, erect or assurgent, simple, or with a few branches above. Root tuberous; stem villous with spreading hairs below, appressed-pubescent above; leaves often crowded toward the base of the stem, frequently 3-foliolate; leaflets 3–5, small, elliptic to obovate or cuneate, obtuse or acute at the apex, often pilose above, soft-pubescent and pale beneath; interposed leaf-segments, if any, a small pair; stipules small, the lower ones lanceolate and entire, the upper rounded on the outer side and laciniate; racemes very loosely flowered, flowers small; fruit 2″ long or less, minutely glandular, hemispheric to turbinate; disk flat; bristles few, ascending or erect.

In dry soil, Pennsylvania and Maryland to Florida, Kentucky and Louisiana. Aug.

4. Agrimonia móllis (T. & G.) Britton. Soft Agrimony. (Fig. 1960.)

Agrimonia Eupatoria var. *mollis* T. & G. Fl. N. A. 1: 431. 1840.
A. mollis Britton, Bull. Torr. Club, 19: 221. 1892.

Virgately branched, 1½°–6° tall. Roots tuberous. Stem pubescent, or villous below, finely pubescent or canescent above, as also the racemes. Leaves thickish, dull green, veiny, pale and velvety-pubescent beneath; leaflets mostly 7 (5–11), spreading, narrowly oblong to obovate, obtuse or acutish at the apex, crenate to dentate; interposed leaf-segments oblong, mostly a single pair; stipules lanceolate to ovate-oblong, cut-toothed or lobed; flowers 3″–4″ broad, the buds subglobose, obtuse; fruit 2″ long or more, ascending, spreading or loosely reflexed, oblong, to broadly turbinate, disk flat, or convex, the ascending slender bristles nearly in a single row.

Dry woods and thickets, Connecticut to Michigan, North Carolina and Kansas. July–Oct.

5. Agrimonia Brittoniàna Bicknell. Britton's Agrimony. (Fig. 1961.)

Agrimonia Brittoniana Bicknell, Bull. Torr. Club, 23: 517. 1896.

Robust, 2°–6° tall, virgately branched. Roots fibrous. Stem hirsute-pubescent with short spreading brownish hairs, sub-appressed above; leaves numerous; leaflets 7–9, rarely 11, oblique to the rachis, tetragonal-elliptic to rhomboid-lanceolate, acute or acuminate, deeply and closely serrate, dull green, thickish, rugose, softly pubescent beneath, glabrate above, their margins finely scabrous-ciliolate; interposed leaf-segments narrow, usually several pairs; stipules lanceolate, acuminate, laciniate; racemes long, erect or ascending; flowers crowded, 3″–5″ wide; fruit 3″–4″ long, reflexed, long-turbinate, deeply grooved; unmargined; disk flat or concave; bristles often purplish, short, crowded, inflexed and connivent over the sepals.

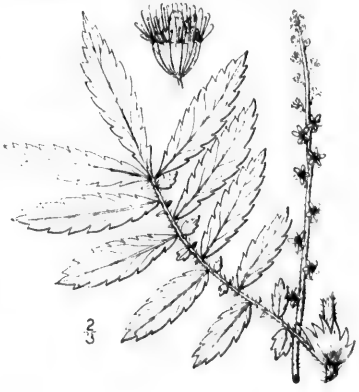
Along thickets and roadsides, Quebec to northern New York, south along or near the mountains to West Virginia. Also in the Rocky Mountains. June–Sept.

6. Agrimonia parviflòra Soland. Many-flowered Agrimony. (Fig. 1962.)

Agrimonia parviflora Soland. in Ait. Hort. Kew. 2: 130. 1789.

Virgately branched, 2°–6° high, with long racemes. Stem densely hirsute with coarse brownish hairs, villous above; leaves crowded, the lower often deflexed; leaflets 9–17, close together, spreading, lanceolate or linear-lanceolate, acuminate, sharply serrate, rather thin, glabrous above, pubescent beneath, especially on the veins, very glandular; interposed leaf-segments mostly 4 or 5 crowded pairs; stipules laciniate, acuminate; flowers very numerous, 3″–5″ broad; the buds rounded-truncate; fruit loosely reflexed, small, glandular, dilated-turbinate with a prominent elevated disk, bristles reflexed, spreading and erect.

In moist or dry soil, southern New York to Michigan, south to Georgia and Mississippi. Roots fibrous. July–Oct.



19. SANGUISÓRBA L. Sp. Pl. 116. 1753.

Erect, mostly perennial herbs, sometimes decumbent at the base, with alternate odd-pinnate stipulate leaves and small perfect or polygamo-dioecious flowers in dense terminal peduncled spikes or heads. Calyx-tube turbinate, constricted at the throat, persistent, 4-lobed, the lobes petaloid, deciduous. Petals none. Stamens 4–∞, inserted on the throat of the calyx; filaments filiform, elongated, exserted; anthers short; carpels 1–3, enclosed in the calyx-tube. Style filiform, terminal. Achene usually 1, enclosed in the dry angled calyx. Seed pendulous. [Latin, blood-staunching, from its supposed properties.]

About 20 species, natives of the north temperate zone. In addition to the following, 2 or 3 others occur in the western parts of North America.

Flowers capitate, greenish; stamens numerous; leaflets 6″–10″ long. 1. *S. Sanguisorba.*
Flowers white, spicate; stamens 4; leaflets 1′–3′ long. 2. *S. Canadensis.*

1. Sanguisorba Sanguisórba (L.) Britton. Salad Burnet. (Fig. 1963.)

Poterium Sanguisorba L. Sp. Pl. 994. 1753.
Sanguisorba Sanguisorba Britton, Mem. Torr. Club, 5: 189. 1894.

Glabrous or pubescent, erect, slender, perennial, branched, 10′–20′ high. Stipules usually small, laciniate; leaflets 7–19, ovate or broadly oval, deeply incised, short-stalked or sessile, 6″–10″ long; flowers greenish, in dense peduncled globose-ovoid heads 3″–6″ long, the lower ones staminate, the upper perfect; stamens numerous, drooping; stigma tufted, purple; calyx-lobes ovate, acute or acutish; fruit 1″–2″ long.

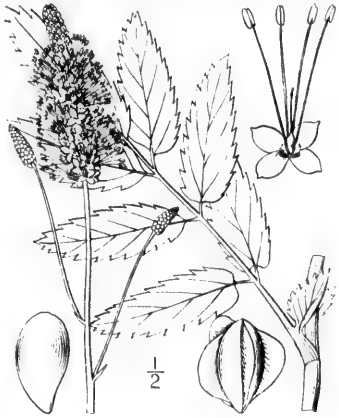
In dry or rocky soil and in ballast, southern Ontario, New York and Pennsylvania to Maryland. Naturalized or adventive from Europe and native also of Asia. Summer. Called also Garden Burnet, Bloodwort, Pimpernelle, and Toper's Plant.

2. Sanguisorba Canadénsis L. American Great Burnet. (Fig. 1964.)

Sanguisorba Canadensis L. Sp. Pl. 117. 1753.
Poterium Canadense A. Gray, Man. Ed. 5, 150. 1867.

Glabrous or slightly pubescent toward the base, erect, branched above, 1°–6° high, the branches erect. Stipules often foliaceous and dentate; basal leaves long-petioled, sometimes 2° long; leaflets 7–15, ovate, oblong, or oval, obtuse or acutish, cordate or obtuse at the base, serrate with acute teeth, stalked, 1′–3′ long; flowers white, perfect, bracteolate at the base, in dense terminal showy spikes 1′–6′ long; stamens 4; filaments long-exserted, white; achene enclosed in the 4-angled calyx.

In swamps and low meadows, Newfoundland to Michigan, south to Georgia. July–Oct.



20. RÒSA L. Sp. Pl. 491. 1753.

Erect or climbing shrubs, generally with subterranean rootstocks. Stems commonly prickly. Leaves alternate, odd-pinnate. Stipules adnate to the petiole. Flowers corymbose or solitary, red, pink or white (in our species). Calyx-tube cup-shaped or urn-shaped, constricted at the throat, becoming fleshy in fruit, 5- (rarely 4-) lobed, the lobes imbricated, spreading, deciduous or persistent. Petals 5 (rarely 4), spreading. Stamens ∞, inserted on the hollow annular disk. Carpels ∞, sessile at the bottom of the calyx; ovaries commonly pubescent; styles distinct or united. Achenes numerous, enclosed in the berry-like fruiting calyx-tube. Seed pendulous. [The ancient Latin name of the rose.]

A large genus, the number of species variously regarded, natives of the northern hemisphere. Besides the following, about 6 others occur in the southern and western parts of North America.

* **Styles cohering in a column; leaflets mostly 3.** 1. *R. setigera.*

* * **Styles all distinct; leaflets 5-11.**

Sepals persistent, erect on the fruit, or spreading.
Infrastipular spines generally none.
Stems unarmed or nearly so; sepals erect on the fruit. 2. *R. blanda.*
Stems armed with numerous prickles.
Leaflets 3–9, often resinous, obtuse at base; flowers solitary; sepals erect on the fruit. 3. *R. acicularis.*
Leaflets 7–11, not resinous, narrowed at base; flowers corymbed; sepals spreading. 4. *R. Arkansana.*
Infrastipular spines commonly present; stems prickly. 5. *R. Woodsii.*
Sepals deciduous, spreading.
Leaflets finely serrate; spines stout, recurved. 6. *R. Carolina.*
Leaflets coarsely serrate.
Infrastipular spines slender, nearly straight; native bushy species.
Stems with scattered prickles or naked; flowers often solitary. 7. *R. humilis.*
Stems very densely prickly; flowers usually solitary. 8. *R. nitida.*
Infrastipular spines stout, hooked; introduced wand-like or climbing species.
Leaflets somewhat pubescent beneath, serrate. 9. *R. canina.*
Leaflets very glandular beneath, doubly serrate. 10. *R. rubiginosa.*

1. **Rosa setigera** Michx. Prairie Rose. Climbing Rose. (Fig. 1965.)

Rosa setigera Michx. Fl. Bor. Am. 1: 295. 1803.

Stems climbing, several feet long, armed with scattered curved prickles, but not bristly. Petioles, twigs and peduncles often glandular-pubescent; stipules very narrow; leaflets 3, or sometimes 5, mostly ovate, acute or obtusish at the apex, rounded at the base, 1′–3′ long, sharply serrate; flowers corymbose, about 2½′ broad; sepals ovate, acute, at length reflexed and deciduous, glandular; petals obcordate, varying from rose-color to white; styles cohering in a glabrous column; fruit globose, 4″–5″ in diameter, more or less glandular.

In thickets and on prairies, southern Ontario to Wisconsin, West Virginia, Florida and Texas. Escaped from cultivation in New Jersey and Virginia. June–July. Called also Michigan Rose.

2. **Rosa blánda** Ait. Smooth or Meadow Rose. (Fig. 1966.)

Rosa blanda Ait. Hort. Kew. 2: 202. 1789.

Erect, low, 2°–4° high; entirely unarmed or with a few straight slender prickles on the stem. Stipules rather broad; leaflets 5–7, short-stalked, usually pale beneath, oval or obovate, obtuse at the apex, commonly narrowed or cuneate at the base, 1′–1½′ long, simply and sharply serrate; flowers pink, sometimes 3′ broad, corymbose or solitary; calyx-lobes lanceolate, acuminate, entire, hispid-pubescent, persistent and erect on the fruit; petals obovate, erose or sometimes obcordate; styles separate; fruit globose or pyriform, glabrous or nearly so, about 5″ in diameter.

In moist, rocky places, Newfoundland to Vermont and northern New Jersey, west to Ontario and Illinois. June–July.

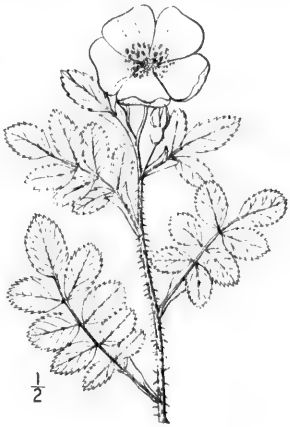
3. Rosa aciculàris Lindl. Prickly Rose. (Fig. 1967.)

Rosa aciculàris Lindl. Ros. Monog. 44. *pl. 8.* 1820.
Rosa Sayi Schwein. in Keating, Narr. Long's Exp. 2: 388. 1824.
R. Engelmanni S. Wats. Gard. & For. 2: 376. 1889.

Bushy, low, 1°–4° high, the stems and often the branches, densely armed with straight prickles; infrastipular spines none. Stipules mostly broad; leaflets 5–9 (rarely 3), oval or oval-lanceolate, obtuse at the apex, rounded at the base, simply or doubly serrate, often more or less resinous-pubescent, 1′–2′ long; flowers usually solitary, 2½′–3′ broad; sepals lanceolate, acuminate or sometimes dilated above, entire or few-toothed, hispid or glabrous, persistent and erect upon the fruit; styles distinct; fruit globose or ovoid, sometimes 1′ long, generally glabrous.

Anticosti to Ontario, northern Michigan, Minnesota and the Northwest Territory, south in the Rocky Mountains to Colorado. We follow Dr. G. N. Best in the reduction of *R. Sayi* and *R. Engelmanni* to this species, which occurs also in northern Europe and Asia. June–July.

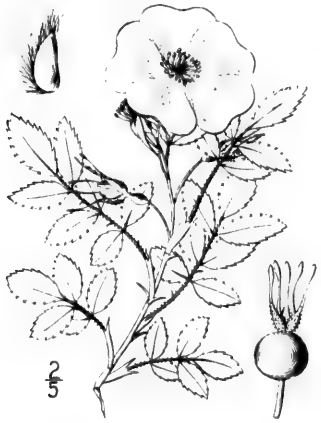
4. Rosa Arkansàna Porter. Arkansas Rose. (Fig. 1968.)



Rosa Arkansana Porter, Syn. Fl. Colo. 38. 1874.
Rosa blanda var. *Arkansana* Best, Bull. Torr. Club, 17: 145. 1890.

Erect, low, 1°–2° high. Stems densely prickly with very slender bristles; infrastipular spines none; stipules rather narrow, sometimes toothed above; leaflets 7–11, oval or obovate, sessile or nearly so, obtuse at the apex, narrowed or often cuneate at the base, seldom over 1′ long, simply and sharply serrate, glabrous on both sides; flowers corymbose or rarely solitary, about 2′ broad; sepals lanceolate, acuminate, sparingly glandular-hispid or glabrous, or sometimes lobed, persistent and spreading or reflexed; styles distinct; fruit globose or nearly so, 4″–6″ in diameter, glabrous.

Prairies, Minnesota and Iowa to Nebraska, Colorado, Texas and New Mexico. June–July.



5. Rosa Woòdsii Lindl. Woods' Rose. (Fig. 1969.)

Rosa Woodsii Lindl. Mon. Ros. 21. 1820.
Rosa Fendleri Crepin, Bull. Soc. Bot. Belg. 15: 91. 1876.

Low, bushy, 1°–3° high, armed with slender mostly straight spines, or naked above. Infrastipular spines commonly present; stipules rather broad, entire; leaflets 3–9, oval or obovate, short-stalked or sessile, obtusish at the apex, narrowed or cuneate at the base, 5″–18″ long, simply and sharply serrate, somewhat glaucous beneath; flowers 1′–2′ broad, corymbose or solitary, short-pedicelled; sepals lanceolate, acuminate, laterally lobed or entire, erect and persistent on the fruit; styles distinct; fruit globose or globose-ovoid, 4″–5″ in diameter, glabrous, sometimes glaucous.

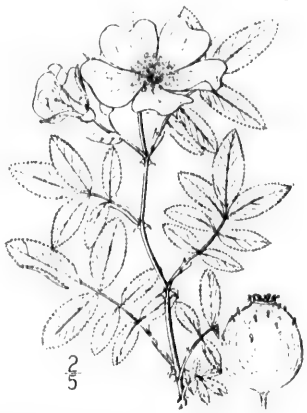
Prairies, Minnesota to Missouri, the Northwest Territory, New Mexico and Colorado. June–July.

6. Rosa Carolina L. Swamp Rose. (Fig. 1970.)

Rosa Carolina L. Sp. Pl. 492. 1753.

Bushy, 1°–8° high, armed with rather distant stout commonly recurved spines. Prickles not very abundant, sometimes none; stipules very narrow; leaflets 5–9 (usually 7), varying considerably in outline, oval, oblong, ovate-lanceolate or even obovate, 1′–3′ long, finely and simply serrate, generally short-stalked, acute or acutish at each end, pale or pubescent beneath; flowers corymbose or rarely solitary, 2′–3′ broad; calyx-lobes lanceolate, acuminate or dilated above, rarely lobed, hispid-pubescent, spreading or reflexed, deciduous; styles distinct; fruit globose or depressed-globose, about 4″ high, glandular-hispid.

In swamps and low grounds, Quebec and Ontario to Minnesota, south to Florida and Mississippi. June–Aug.



7. Rosa hùmilis Marsh. Low or Pasture Rose. (Fig. 1971.)

Rosa humilis Marsh. Arb. Am. 136. 1785.
Rosa parviflora Ehrh. Beitr. 4: 21. 1789.

Bushy, 6′–6° high, usually armed with slender straight infrastipular spines, and more or less prickly. Stipules narrow, entire; leaflets usually 5 (sometimes 7), rather thin, ovate oval or obovate, somewhat shining, coarsely and simply serrate, 6″–2′ long, mostly acute or acutish at each end, short-stalked or sessile, glabrous or pubescent beneath; flowers usually few or solitary, 2′–3′ broad; pedicels and calyx usually glandular; sepals lanceolate, acuminate, or dilated above, commonly lobed, spreading and deciduous; petals obovate, obcordate or sometimes lobed; styles distinct; fruit globose or depressed-globose, glandular-hispid, about 4″ high.

In dry or rocky soil, Maine and Ontario to Wisconsin, south to Georgia and Louisiana. Our commonest wild rose. A double-flowered form occurs in Pennsylvania and New Jersey. May–July.

Rosa hùmilis lùcida (Ehrh.) Best, Bull. Torr. Club, 14: 256. 1887.

Rosa lucida Ehrh. Beitr. 4: 22. 1789.

Leaflets 5–9, thicker, shining above, stipules broader; flowers more numerous. New Jersey and Pennsylvania to Ontario and Newfoundland.

Rosa hùmilis villòsa Best, Bull. Torr. Club, 14: 256. 1887.

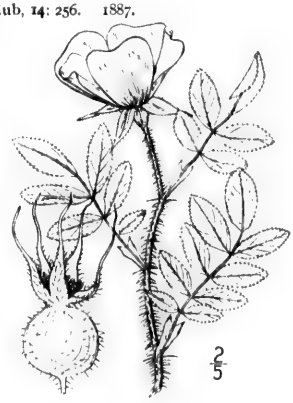
Low, very prickly; leaflets thickish, villous-pubescent beneath. New Jersey and southern New York.

8. Rosa nítida Willd. Northeastern Rose. (Fig. 1972.)

Rosa nitida Willd. Enum. 544. 1809.

Low, bushy, seldom over 2° high, the stems and branches very densely covered with slender straight prickles nearly as long as the slender infrastipular spines. Stipules usually broad, often glandular; leaflets 5–9, oblong or oval, generally acute at each end, short-stalked, the terminal one sometimes slightly obovate and obtuse at the apex, all sharply serrate, shining above, glabrous or very nearly so, 6″–15″ long; flowers solitary or few, 1′–2½′ broad; sepals lanceolate, acuminate, entire, hispid or glandular, at length spreading, deciduous; petals often obcordate; styles distinct; fruit glandular-hispid, globose, about 4″ high.

In low grounds, Massachusetts to Newfoundland. June–July.



9. Rosa canina L. Dog Rose. Canker Rose. Wild Brier. (Fig. 1973.)

Rosa canina L. Sp. Pl. 491. 1753.

Branches erect or straggling, sometimes 10° long, armed with stout short hooked spines, not bristly but sometimes glandular. Stipules broad, glandular; leaflets 5–7, ovate or oval, rather thick, generally obtuse at each end, usually simply and sharply serrate, sometimes pubescent beneath, glabrous or nearly so above, 1′–1½′ long; flowers solitary or few, pink varying to white; sepals much lobed, lanceolate, reflexed, deciduous; styles distinct; fruit long-ovoid, 6″–9″ long, usually glabrous.

In waste places, especially along roadsides, Nova Scotia western New Jersey and eastern Pennsylvania; abundant in the valley of the Delaware. Also in Tennessee. Naturalized or adventive from Europe; native also in northern Asia. Called also Cat-whin and Canker-blooms (Shakspere). June–July.

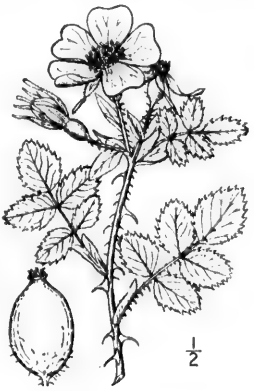
10. Rosa rubiginosa L. Sweetbrier. (Fig. 1974.)

Rosa rubiginosa L. Mant. 2: 564. 1771.
Rosa micrantha J. E. Smith, Eng. Bot. *pl. 2490.*
Rosa eglanteria Mill. Dict. Ed. 8, no. 4. 1768. Not L. 1753.

Slender, 4°–6° high, or often forming longer wands, armed with stout recurved spines. Stipules rather broad; leaflets 5–7, similar to those of the preceding species in outline, but generally doubly serrate and densely glandular-pubescent and resinous beneath, very aromatic; flowers pink varying to white; sepals lanceolate, usually much lobed, spreading, deciduous, glandular-hispid; fruit oval or ovoid, 6″–10″ long.

In waste places, Nova Scotia to Ontario, Tennessee and Virginia. Adventive or naturalized from Europe; native also in central Asia. June–July. The Eglantine of Chaucer, Spenser and Shakspere.

Rosa cinnamomea L., the Cinnamon Rose, with small double reddish flowers, and leaves downy-pubescent beneath, is occasionally found along roadsides in the Middle States.



Family 44. **POMACEAE** L. Ord. Nat. 1764.

APPLE FAMILY.

Trees or shrubs, with alternate pinnately veined or pinnate petioled leaves, the small deciduous stipules free from the petiole. Flowers regular, perfect, racemed, cymose or solitary. Calyx superior, mostly 5-toothed or 5-lobed, its tube adnate to the ovary. Petals mostly 5, usually clawed. Stamens numerous or rarely few, distinct; anthers small, 2-celled, the sacs longitudinally dehiscent. Ovary 1–5-celled, usually 5-celled, composed of 1–5 wholly or partly united carpels; ovules 1–2 (rarely several) in each carpel, anatropous, ascending; styles 1–5; stigma small. Fruit a more or less fleshy pome, consisting of the thickened calyx-tube enclosing the bony papery or leathery carpels. Endosperm none; cotyledons fleshy.

About 20 genera and 225 species, of wide geographic distribution.

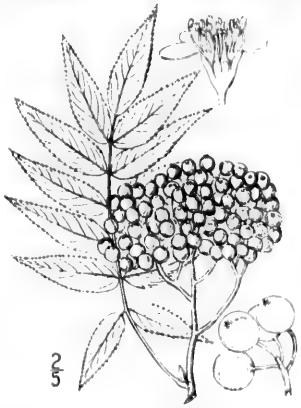
Ripe carpels papery or leathery.
  Leaves pinnate. 1. *Sorbus.*
  Leaves simple, entire, toothed, or lobed.
    Cavities of the ovary (carpels) as many as the styles.
      Flesh of the pome with grit-cells. 2. *Pyrus.*
      Flesh of the pome without grit-cells.
        Cymes simple; trees. 3. *Malus.*
        Cymes compound; low shrubs. 4. *Aronia.*
    Cavities of the ovary becoming twice as many as the styles. 5. *Amelanchier.*
Ripe carpels bony.
  Ovule 1 in each carpel, or if 2, dissimilar. 6. *Crataegus.*
  Ovules 2 in each carpel, alike. 7. *Cotoneaster.*

1. SÓRBUS L. Sp. Pl. 477. 1753.

Trees or shrubs, with alternate pinnate leaves, serrate leaflets, deciduous stipules, and perfect regular white flowers, in terminal compound cymes. Calyx-tube urn-shaped, 5-lobed, not bracteolate. Petals 5, spreading, short-clawed. Stamens ∞. Ovary inferior; styles usually 3, distinct; stigma truncate; ovules 2 in each cavity. Fruit a small red berry-like pome, its carpels not cartilaginous. [The ancient Latin name of the Pear or Service-tree.]

A genus of about 7 species, natives of the north temperate zone. Besides the following, another occurs in western North America.

Leaflets long-acuminate; fruit 2″–3″ in diameter. 1. *S. Americana.*
Leaflets obtuse or short-pointed; fruit about 4″ in diameter. 2. *S. sambucifolia.*



1. Sorbus Americàna Marsh. American Mountain Ash. Dogberry. (Fig. 1975.)

Sorbus Americana Marsh. Arb. Am. 145. 1785.
Sorbus microcarpa Pursh, Fl. Am. Sept. 341. 1814.
Pyrus Americana DC. Prodr. 2: 637. 1825.

A small tree, with smooth bark, reaching a maximum height of 30° and a trunk diameter of 18′. Leaf-buds acute; leaves petioled; leaflets 11–17, lanceolate, long-acuminate, glabrous on both sides or slightly pubescent when young, bright green above, generally paler beneath, 1½′–4′ long, sharply serrate with mucronate teeth; cymes densely compound, 3′–6′ broad; flowers 2″–3″ broad; fruit globose, bright red, 2″–3″ in diameter.

In low woods or moist ground, Newfoundland to Manitoba, south, especially along the mountains, to North Carolina and to Michigan. Wood soft, light brown; weight per cubic foot 34 lbs. Called also American Service Tree. A closely related or identical form occurs in Japan. May-June.

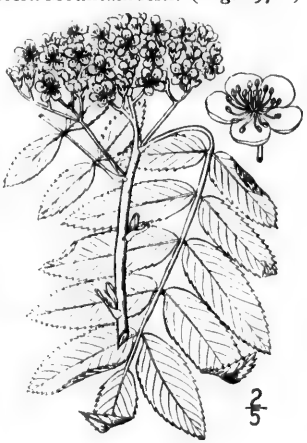
2. Sorbus sambucifòlia (C. & S.) Roem. Western Mountain Ash. (Fig. 1976.)

Pyrus sambucifolia C. & S. Linnaea, 2: 36. 1827.
Sorbus sambucifolia Roem. Syn. Mon. 3: 39. 1847.

A small tree or often a shrub, closely resembling the preceding species. Leaf-buds acute; leaflets 7–15, proportionately broader and shorter, oval or ovate-lanceolate, obtuse or short-pointed at the apex, sharply serrate, glabrous and dark green above, pale and usually more or less pubescent beneath, especially along the veins, seldom over 3′ long; flowers 3″–3½″ broad; calyx and pedicels generally pubescent; cymes 2′–4′ broad; fruit globose, red, about 4″ in diameter.

In moist ground, Labrador to Alaska, northern New England, Pennsylvania, Michigan, and in the Rocky Mountains to Colorado and Utah. Wood similar to that of the preceding; weight per cubic foot 37 lbs. Occurs also in northeastern Asia. June-July.

Sorbus Aucupària L., the European Mountain Ash, Rowan Tree or Quick-beam, has the leaves pubescent on both sides, especially when young, the calyx and pedicels usually woolly. Often planted; reported as escaped from cultivation in Prince Edward Island.

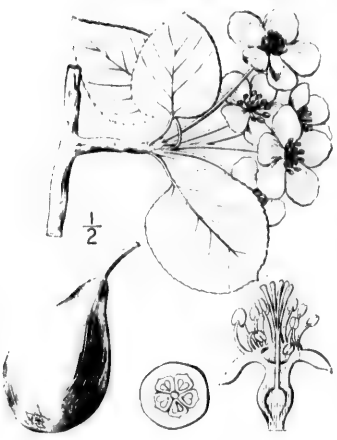


2. PÝRUS L. Sp. Pl. 479. 1753.

Trees, or some species shrubs, with simple leaves. Flowers large, showy, white or pink, in simple terminal cymes. Calyx urn-shaped, 5-lobed, the lobes acute. Petals 5, rounded, short-clawed. Stamens usually numerous; styles mostly 5, distinct, or united only at the very base; ovules 2 in each cavity; carpels cartilaginous or leathery. Fruit a pome, usually pear-shaped, its flesh abounding in grit-cells. [Latin name of the Pear.]

About 12 species, natives of the Old World.

1. Pyrus communis L. Pear. Choke Pear. (Fig. 1977.)



Pyrus communis L. Sp. Pl. 479. 1753.

A tree, sometimes 60° high and with a trunk 2°–3° in diameter, commonly much smaller, the branches usually thorny. Leaves ovate, elliptic or obovate, finely serrulate or entire, slender-petioled, 1½′–3′ long, downy and ciliate when young, becoming glabrous or nearly so when old, the apex acute or acuminate, the base usually rounded; petioles sometimes as long as the blades or longer; cymes few-several-flowered, borne at the ends of short twigs of the preceding year; pedicels 9″–2′ long, at first downy; flowers white, 1′–2′ broad; calyx-lobes about as long as the tube; styles distinct to the base; pome, in the wild form, seldom over 2′ long, in the numerous cultivated forms often much larger.

In thickets and woods, Maine to New York, New Jersey and Pennsylvania, escaped from cultivation. Native of Europe and Asia. Wood hard, fine-grained, reddish-brown; weight per cubic foot 51 lbs. April–May.

3. MÀLUS Juss. Gen. 334. 1789.

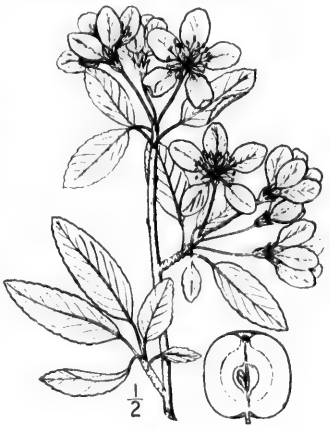
Trees or shrubs, with alternate toothed or lobed leaves, and showy pink or white flowers in simple terminal cymes. Calyx-tube urn-shaped or campanulate, 5-lobed. Petals 5, rounded, clawed. Styles 2–5 (usually 5), united at the base; ovules 2 in each cavity, carpels papery or leathery. Fruit a pome, usually depressed-globose, mostly hollowed at the base, but sometimes rounded, its flesh not containing grit-cells. [Greek, apple.]

About 15 species, natives of the north temperate zone. Besides the following, another occurs in northwestern America.

Leaves glabrous, at least when mature.
- Leaves ovate-lanceolate, narrowed at the base. — 1. *M. angustifolia.*
- Leaves ovate, cordate or rounded at the base. — 2. *M. coronaria.*

Leaves persistently pubescent or tomentose beneath.
- Leaves mostly narrowed at the base; pome 1′–1½′ in diameter.
  - Pedicels slender, 1′–1½′ long. — 3. *M. Ioensis.*
  - Pedicels stout, 6″–12″ long. — 4. *M. Soulardi.*
- Leaves rounded or subcordate at the base; pome 2′–4′ in diameter. — 5. *M. Malus.*

1. Malus angustifòlia (Ait.) Michx. Narrow-leaved Crab Apple. (Fig. 1978.)



Pyrus angustifolia Ait. Hort. Kew. 2: 176. 1789.

Malus angustifolia Michx. Fl. Bor. Am. 1: 292. 1803.

A small tree, sometimes 20° high and the trunk 10′ in diameter. Leaves oblong, oblong-lanceolate or oval, thick, shining and dark green above, glabrous when mature, sometimes pubescent beneath when young, dentate or often entire, obtusish or acute at the apex, narrowed at the base, 1′–2′ long; cymes few-flowered; pedicels 1′–1½′ long, slender; flowers pink, fragrant, mostly less than 1′ broad; styles nearly separate; pome about 1′ in diameter.

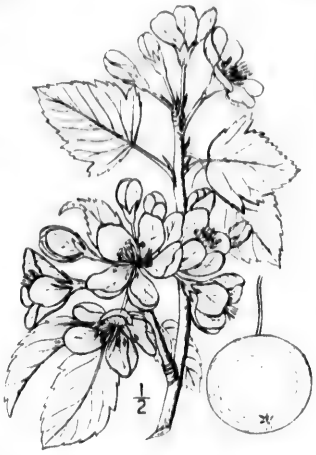
In thickets, New Jersey to Illinois and Kansas, south to Florida and Louisiana. Wood hard, reddish brown; weight per cubic foot 43 lbs. March–May.

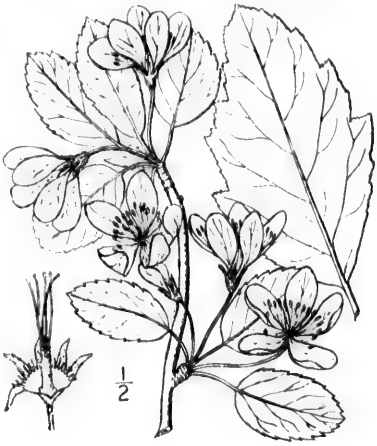
2. Malus coronària (L.) Mill. American Crab Apple. (Fig. 1979.)

Pyrus coronaria L. Sp. Pl. 480. 1753.
Malus coronaria Mill. Gard. Dict. Ed. 8, no. 2. 1768.

A small tree, sometimes reaching a height of 25° and trunk diameter of 12′. Leaves petioled, ovate to triangular-ovate, sparingly pubescent beneath along the veins when young, glabrous when old, sharply serrate and often somewhat lobed, ovate, acute or acutish at the apex, rounded or cordate at the base, 1′–3′ long; flowers rose-colored, very fragrant, 1′–2′ broad; pedicels 6″–18″ long, glabrous; calyx slightly pubescent; pome fleshy, globose or depressed, 1′–1½′ in diameter, greenish-yellow, fragrant, very acid.

In thickets, Ontario to Michigan, south to New Jersey and South Carolina. Wood soft, reddish brown; Weight per cubic foot 44 lbs. Called also Sweet-scented Crab Tree. April–May. Fruit ripe Sept.



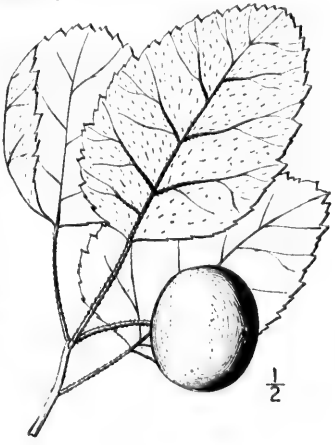


3 Malus Ioénsis (Wood) Britton. Western Crab Apple. (Fig. 1980.)

Pyrus coronaria var. *Ioensis* Wood, Classbook, 333. 1860.
Pyrus Ioensis Bailey, Am. Gard. 12: 473. 1891.

A small tree, resembling *Malus coronaria*. Leaves simple, firm, white-pubescent beneath, at length glabrous above, obtuse at the apex, mostly narrowed at the base, ovate, oval or oblong, dentate, crenate or with a few rounded lobes, 1′–2′ long, or on young shoots much larger; petioles and calyx pubescent, ½′–1½′ long; flowers much like those of *M. coronaria*; pedicels pubescent, slender, 1′–1½′ long.

Minnesota, Wisconsin and Illinois to Kentucky, Louisiana and the Indian Territory. April–May.

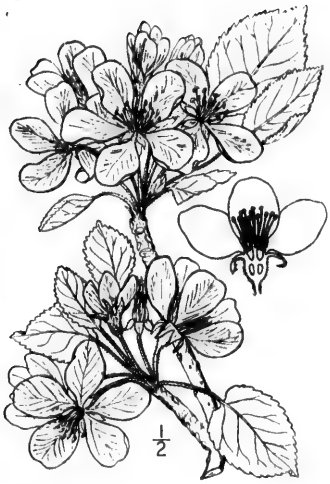


4. Malus Soulàrdi (Bailey) Britton. Soulard Crab Apple. (Fig. 1981.)

Pyrus Soulardi Bailey, Am. Gard. 12: 473. 1891.

A small upright stout-growing tree, resembling the two preceding species. Leaves ovate, elliptic or obovate, mostly obtuse or truncate at the apex, narrowed or rounded at the base, rugose and densely tomentose beneath, irregularly crenate-dentate or sometimes few-lobed; petioles 1′ long or less, tomentose; flowers smaller than those of *M. coronaria*, the cymes dense; pedicels stout, white-tomentose, 6″–12″ long; pome 1′–2½′ in diameter.

Minnesota to Missouri and Texas. Regarded by some as a hybrid between the preceding and the following species. April–May.



5. Malus Màlus (L.) Britton. Apple. (Fig. 1982.)

Pyrus Malus L. Sp. Pl. 479. 1753.
Malus sylvestris Mill. Gard. Dict. Ed. 8, no. 1. 1768.

A large tree with spreading branches, the trunk sometimes reaching a diameter of 3° in cultivation. Leaves petioled, broadly ovate or oval, obtuse or abruptly pointed at the apex, rounded or slightly cordate at the base 1′–3′ long, dentate or nearly entire, glabrous or nearly so above, pubescent and often woolly beneath, especially when young; pedicels generally tomentose, 1′–2′ long; flowers pink, or white, 1½′–3′ broad; calyx tomentose; fruit depressed-globose or elongated, hollowed at the base, 1½′–3′ in diameter.

In woods and thickets, frequent in southern New York, New Jersey and Pennsylvania. Our common apple, introduced from Europe and escaped from cultivation. Native also of western Asia. Wood hard, reddish brown; weight per cubic foot 50 lbs. April–May.

4. ARÒNIA Pers. Syn. 2: 39. 1807.

Low shrubs, with alternate simple petioled finely serrate leaves, the upper side of the midrib glandular, the narrow stipules early deciduous Flowers small, white or pink, in terminal compound cymes. Calyx urn-shaped, 5-lobed. Petals 5, concave, spreading. Stamens numerous. Styles 3–5, united at the base. Ovary woolly. Pome small, globose or somewhat top-shaped, not hollowed at the base, its carpels rather leathery. [Name modified from *Aria*, the Beam-tree of Europe.]

The genus consists of the following species:

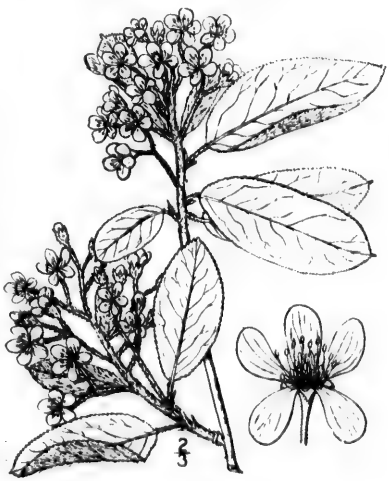
Cyme and lower surfaces of the leaves woolly; fruit bright red. 1. *A. arbutifolia.*
Cymes and leaves glabrous or nearly so; fruit black or purplish. 2. *A. nigra.*

1. Aronia arbutifòlia (L.) Ell. Red Choke-berry. (Fig. 1983.)

Mespilus arbutifolia L. Sp. Pl. 478. 1753.
Pyrus arbutifolia L. f. Suppl. 256. 1781.
Mespilus arbutifolia var. *erythrocarpa* Michx. Fl. Bor. Am. 1: 292. 1803.
Aronia arbutifolia Ell. Bot. S. C. & Ga. 1: 556. 1821.

A branching shrub, sometimes reaching a height of 12°, but usually much lower. Leaves petioled, oval, oblong or obovate, obtuse or abruptly short-pointed at the apex, narrowed or somewhat cuneate at the base, 1′–3′ long, serrulate-crenulate, glabrous above, generally densely tomentose beneath; cymes terminal, but at length overtopped by the young sterile shoots, compound; flowers white or purplish-tinged, 4″–6″ broad; calyx and pedicels tomentose; pome 2″–3″ in diameter, globose or somewhat depressed, and bright red when mature.

In swamps and wet woods, reported from Nova Scotia to Minnesota, south to Florida and Louisiana. Called also Dogberry Tree. March–May.



2. Aronia nigra (Willd.) Britton. Black Chokeberry. (Fig. 1984.)

Mespilus arbutifolia var. *nigra* Willd. Sp. Pl. 2: 1013. 1800.
Mespilus arbutifolia var. *melanocarpa* Michx. Fl. Bor. Am. 1: 292. 1803.
Pyrus nigra Sargent, Gard. & For. 3: 416. 1890.
Aronia nigra Britton, Mem. Torr. Club, 5: 182. 1894.

A shrub resembling the preceding species, and generally regarded as a variety of it. Leaves obovate or oval, obtuse, acute or abruptly acuminate at the apex, narrowed or cuneate at the base, short-petioled, crenulate, dark green above, paler beneath, glabrous or nearly so on both surfaces; flowers similar to the preceding; calyx and pedicels nearly glabrous; fruit globose or oval, nearly black, or purplish black, 3″–4″ in diameter.

In swamps or low woods, or sometimes in drier soil, Nova Scotia to western Ontario, south to Florida and Michigan. Ascends to 6000 ft. in North Carolina. March–June.

5. AMELÁNCHIER Medic. Phil. Bot. 1: 155. 1789.

Shrubs or trees, with alternate simple petioled serrate or entire leaves, unarmed branches, and racemose or rarely solitary white flowers. Calyx-tube campanulate, more or less adnate to the ovary, 5-lobed, the lobes narrow, reflexed, persistent. Petals 5. Stamens ∞, inserted on the throat of the calyx; filaments subulate; styles 2–5, connate, pubescent at the base. Ovary wholly or partly inferior, its cavities becoming twice as many as the styles; ovule 1 in each cavity, erect. Pome small, berry-like, 4–10-celled. Testa of the seed cartilaginous. [The Savoy name of the Medlar.]

A genus of about 12 species, natives of the north temperate zone. Besides the following, some 3 others occur in western North America and 1 in Mexico.

Flowers several or numerous in the racemes; pome globose.
- Glabrous or pubescent trees and shrubs; leaves usually serrate nearly all around.
  - Leaves acute or acuminate at the apex; top of the ovary glabrous or nearly so.
    - Leaves ovate or ovate-lanceolate, glabrous when mature; base cordate or rounded. 1. *A. Canadensis.*
    - Leaves oblong, oval, ovate or obovate, rarely subcordate at base, densely white-woolly beneath, at least when young. 2. *A. Botryapium.*
  - Leaves rounded, obtuse or subacute at the apex; top of the ovary woolly.
    - Low shrub of rocky places, 1°–2° high; petals 2″–4″ long. 3. *A. spicata.*
    - Tree or small shrub; petals 5″–8″ long. 4. *A. rotundifolia.*
- Glabrous western shrub; leaves dentate above the middle only. 5. *A. alnifolia.*

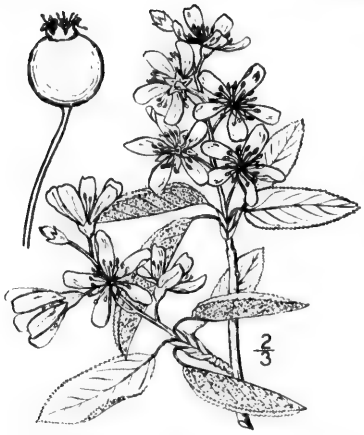
Flowers only 1–4 in the clusters; pome oblong or obovoid. 6. *A. oligocarpa.*

1. Amelanchier Canadénsis (L.) Medic. June-berry. Service-berry. May-cherry. (Fig. 1985.)

Mespilus Canadensis L. Sp. Pl. 478. 1753.
Crataegus racemosa Lam. Encycl. 1: 84. 1783.
A. Canadensis Medic. Geschichte, 79. 1793.

A tree, sometimes reaching the height of 60°, with trunk diameter of 2°, but usually lower, seldom over 25° high. Leaves ovate or oval, acute or acuminate at the apex, rounded or cordate at the base, sharply and finely serrate, sometimes sparingly pubescent when young, soon entirely glabrous, 1′–3′ long, or larger on young shoots; racemes spreading or drooping; pedicels long, slender; bracts silky, purplish, deciduous; petals linear, linear-spatulate, or linear-oblong, 6″–9″ long, 3–4 times the length of the nearly or quite glabrous calyx; pome globose, red or purple, sweet, about 3″ high.

In dry woodlands, Newfoundland to western Ontario, south to Florida and Louisiana. Wood very hard, brown; weight per cubic foot 49 lbs. March–May. Fruit ripe June–July.



2. Amelanchier Botryàpium (L. f.) DC. Shad-bush. Swamp Sugar-Pear. (Fig. 1986.)

Pyrus Botryapium L. f. Suppl. 255. 1781.
A. Botryapium DC. Prodr. 2: 632. 1825.
Amelanchier Canadensis var. *oblongifolia* T. & G. Fl. N. A. 1: 473. 1840.

A shrub or small tree, sometimes 30° high, the foliage and inflorescence densely white-woolly when young, often nearly or quite glabrous when old. Leaves oval, oblong, elliptic or obovate, acute at the apex, rounded, or sometimes narrowed or subcordate at the base, finely and sharply serrate nearly all around; racemes short, rather dense; pedicels short, seldom over 1′ long; petals spatulate or linear-spatulate, 3″–7″ long, 2–3 times as long as the calyx-lobes; calyx usually densely white-woolly; pome globose, 3″–4″ in diameter.

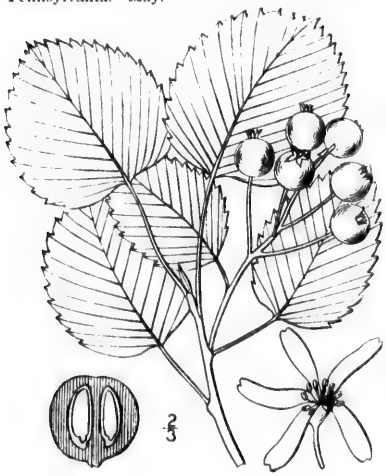
In swamps and moist soil, New Brunswick to Manitoba, Florida and Louisiana. April–May.

3. Amelanchier spicàta (Lam.) Dec. Low June-berry. (Fig. 1987.)

Crataegus spicata Lam. Encycl. 1: 84. 1783.
Amelanchier spicata Dec. Nouv. Arch. Mus. Paris, 10: 135. *pl.* 9. 1874.

Stems 1°–3° high from a long root creeping among rocks. Leaves elliptic or oval, 9″–1½′ long, rounded at both ends, or sometimes subacute at the apex, sometimes subcordate at the base, serrulate or dentate-serrate nearly all around or sometimes entire below the middle, dark green and quite glabrous when mature, woolly when young; racemes numerous, 4–10-flowered; pedicels slender, ½′–1′ long in fruit; petals 2″–4″ long; calyx-lobes nearly triangular; top of the ovary woolly; pome globose, about 3″ in diameter.

In dry rocky places, New York, New Jersey and Pennsylvania. May.



4. Amelanchier rotundifòlia (Michx.) Roem. Round-leaved June-berry. (Fig. 1988.)

Mespilus Canadensis var. *rotundifolia* Michx. Fl. Bor. Am. 1: 291. 1803.
Amelanchier Canadensis var. *rotundifolia* T. & G. Fl. N. A. 1: 473. In part, 1840.
A. rotundifolia Roem. Syn. Mon. 3: 146. 1847.

A tall shrub or small tree, sometimes 25° high. Leaves broadly oval, ovate or nearly orbicular, 1′–3′ long, obtuse or rounded at both ends, or rarely subacute, often cordate at the base, serrate nearly all around with large teeth, or entire near the base, glabrous from the time of unfolding or more or less woolly when very young; racemes several-flowered; pedicels slender, 1′–1½′ long in fruit; calyx-lobes lanceolate; petals spatulate or oblanceolate, 5″–8″ long; pome globose, 3″–4″ in diameter.

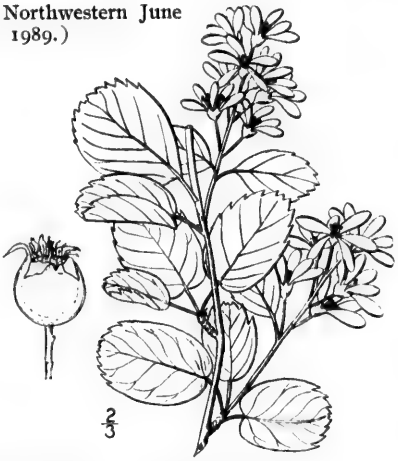
In woods and thickets, New Brunswick to Minnesota, New York and Michigan. May. Fruit ripe in August, after that of *A. Canadensis* has fallen.

5. Amelanchier alnifòlia Nutt. Northwestern June or Service-berry. (Fig. 1989.)

Aronia alnifolia Nutt. Gen. 1: 306. 1818.
Amelanchier Canadensis var. *alnifolia* T. & G. Fl. N. A. 1: 473. 1840.
Amelanchier alnifolia Nutt.; T. & G. Fl. N. A. 1: 473. As synonym. 1840.

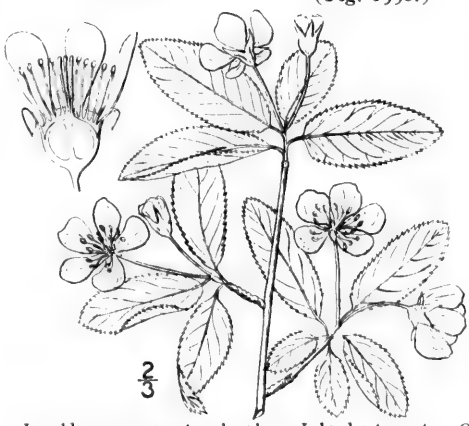
A shrub, 6°–8° high, more or less tomentose-pubescent when young, at length glabrate throughout and somewhat glaucous. Leaves thick, broadly elliptic or almost orbicular, very obtuse and often truncate (rarely acutish) at the apex, rounded or subcordate at the base, coarsely dentate above the middle, ½′–2′ long; racemes short, rather dense; pedicels short; petals oblanceolate, cuneate, 3″–9″ long, 2–4 times the length of the calyx; pome globose, purple with a bloom, 3″–4″ high, sweet.

Dry soil, western Ontario to British Columbia, south to Michigan, Nebraska, New Mexico and California. April.



6. Amelanchier oligocàrpa (Michx.) Roem. Oblong-fruited June-berry. (Fig. 1990.)

Mespilus Canadensis var. *oligocarpa* Michx. Fl. Bor. Am. 1: 291. 1803.
A. Canadensis var. *oligocarpa* T. & G. Fl. N. A. 1: 474. 1840.
Amelanchier oligocarpa Roem. Syn. Mon. 3: 145. 1847.



A shrub, 2°–9° high, glabrous or very nearly so throughout, except the early deciduous bracts, which are sometimes loosely tomentose. Leaves thin, narrowly oval or oblong, generally about 3 times as long as broad, narrowed and acute or acutish at each end, finely and sharply serrate, 1′–3′ long; racemes 1–4-flowered; pedicels slender; petals obovate or oblanceolate, 3″–4″ long, about twice as long as the calyx; pome pear-shaped, purple, with a bloom, 3″–4″ long.

In cold swamps or wet rocky places, Labrador to western Ontario, south to northern New England, Pennsylvania and Michigan. May.

6. CRATAÈGUS L. Sp. Pl. 475. 1753.

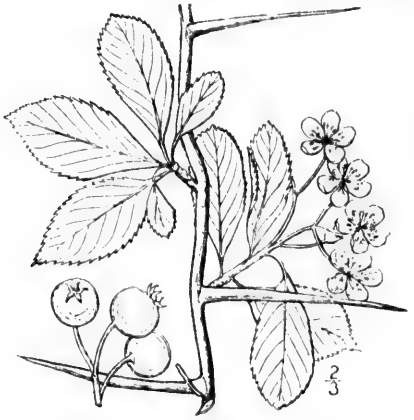
Shrubs or small trees, usually spiny, with alternate petioled serrate lobed or pinnatifid leaves and white or pink terminal corymbose flowers. Calyx-tube cup-shaped or campanulate, adnate to the carpels, its limb 5-lobed. Petals 5, spreading, rounded, inserted on the throat of the calyx. Stamens ∞, usually numerous; filaments filiform. Ovary inferior, or its summit free, 1–5-celled; styles 1–5, separate; ovule 1 in each carpel, or if 2, dissimilar. Pome rather small, drupe-like, containing 1–5 bony carpels, each 1-seeded or rarely 2-seeded. Seed erect, flattish. [Greek, strong, from the toughness of the wood.]

About 50 species, natives of the north temperate zone, Mexico and the Andes of New Granada. Besides the following, 4 or 5 others occur in the southern and western parts of North America.

Corymbs many-flowered.
Leaves obovate, spatulate or oblanceolate.
Foliage, pedicels and calyx glabrous.
Leaves obovate or oblanceolate, sharply serrate. 1. *C. Crus-Galli.*
Leaves narrowly spatulate, crenate-dentate at the apex. 2. *C. spathulata.*
Lower leaf-surfaces, pedicels and calyx somewhat pubescent. 3. *C. punctata.*

Leaves ovate, broadly oval or nearly orbicular in outline.
Foliage, pedicels and calyx glabrous or nearly so.
Leaves mainly truncate or cordate at the base, lobed. 4. *C. cordata.*
Leaves narrowed or wedge-shaped at the base.
Leaves much incised; styles 1–3. 5. *C. Oxyacantha.*
Leaves serrate or but little incised; styles mostly 5. 6. *C. viridis.*
Lower surfaces or teeth of the leaves, pedicels and calyx pubescent or gland-bearing.
Leaves deeply pinnately incised; pome 3″ long. 7. *C. apiifolia.*
Leaves serrate or lobed, not deeply incised; pome 4″–12″ long.
Leaves glabrous or nearly so, their teeth mostly tipped with small glands.
Leaves, or most of them, truncate or cordate at the base. 8. *C. coccinea.*
Leaves, or most of them, narrowed at the base.
Fruit subglobose, pyriform or oval, 5″–7″ in diameter; bractlets and calyx densely glandular. 9. *C. rotundifolia.*
Fruit globose, 3″–4″ in diameter; bractlets and calyx somewhat glandular. 10. *C. macracantha.*
Leaves pubescent, especially along the veins beneath.
Leaves broadly ovate, truncate or cordate at the base; flowers 1′ broad. 11. *C. mollis.*
Leaves oval, narrowed at both ends; flowers 6″–8″ broad. 12. *C. tomentosa.*
Corymbs 1–7-flowered.
Calyx-lobes not incised; petioles and leaf-serrations very glandular. 13. *C. flava.*
Calyx-lobes deeply incised; petioles and leaf-serrations little or not at all glandular.
Leaves obovate or spatulate, obtuse. 14. *C. uniflora.*
Leaves oval, mostly acute at both ends. 15. *C. Vailiae.*

1. Crataegus Crús-Gálli L. Cockspur Thorn. Newcastle Thorn. (Fig. 1991.)



Crataegus Crus-Galli L. Sp. Pl. 476. 1753.

A shrub or small tree, with maximum height of about 30° and trunk diameter of 1°, the branches spreading. Thorns numerous, slender, 2′–4′ long; leaves coriaceous, shining above, dull beneath, glabrous on both sides, obovate or oblanceolate, obtuse or abruptly acuminate at the apex, very cuneate at the base, 1′–2′ long, sharply and somewhat irregularly serrate; corymbs many-flowered, terminating short branches; pedicels and calyx glabrous; flowers about 6″ broad; calyx-lobes linear-lanceolate; styles usually 1–3; fruit globose or slightly pear-shaped, about 3″ long.

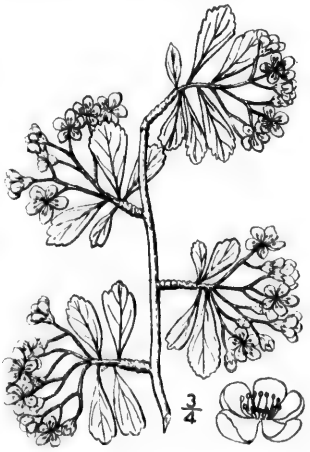
In thickets, western Quebec to Manitoba, south to Florida and Texas. Wood hard, satiny, reddish brown. Weight per cubic foot 45 lbs. May–June.

2. Crataegus spathulàta Michx. Small-fruited Haw. (Fig. 1992.)

Mespilus Azarolus Marsh. Arb. Am. 88. 1785. Not *C. Azarolus* L. 1753.
Crataegus spathulata Michx. Fl. Bor. Am. 1: 288. 1803.

A shrub or small tree, sometimes reaching a height of 25° and trunk diameter of 10′. Spines 1′–2′ long; leaves fascicled near the ends of short branches, coriaceous, shining above, rather dull beneath, glabrous on both sides, spatulate, obtuse and crenate or with 2–3 lobes at the summit, entire and narrowly cuneate at base, almost sessile, 1′ long, or those of the sterile branches often larger; cymes terminating short branches, many-flowered; pedicels and calyx glabrous; flowers about 4″ broad; calyx-lobes ovate; styles commonly 5; fruit red, globose, or oval-globose, 2″–3″ long.

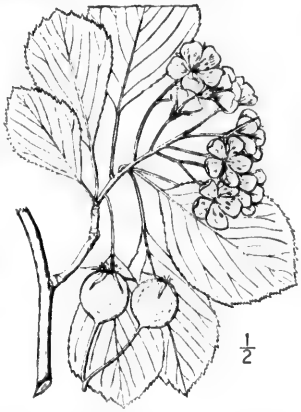
In thickets, Virginia to Florida, west to Missouri and Texas. Wood hard, reddish brown. Weight per cubic foot 45 lbs. May–June.



3. Crataegus punctàta Jacq. Large-fruited Thorn. (Fig. 1993.)

Crataegus punctata Jacq. Hort. Vind. 1: 10. *pl. 28.* 1770.
Mespilus cornifolia Muench. Hausv. 5: 145. 1770.
Crataegus tomentosa var. *punctata* A. Gray, Man. Ed. 2, 124. 1856.

A shrub or small tree, sometimes 25° high, with horizontal, thorny branches. Thorns 1′–2′ long, often branched; leaves slender-petioled, obovate, obtuse or short-pointed at the apex and irregularly serrate or serrulate, cuneate and often entire at the base, nearly glabrous above pubescent or at length glabrous beneath, 2′–3′ long, rarely lobed, veins straight, conspicuous; corymbs many-flowered; flowers 5″–9″ broad; calyx-lobes linear, entire; styles 3–5; calyx and pedicels pubescent or glabrate; fruit globose or oval, red or yellow, 8″–12″ in diameter.

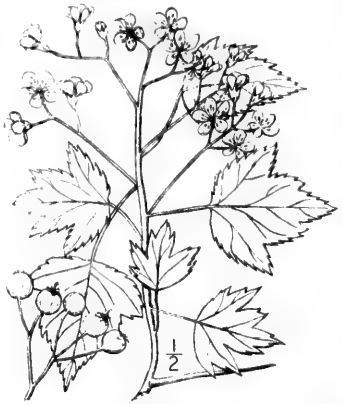


In thickets, Quebec and Ontario to Georgia, especially in the mountains, west to Iowa. May.

Crataegus punctàta canéscens Britton, Bull. Torr. Club, 21: 231. 1894.

Lower leaf-surfaces, petioles, peduncles and pedicels densely whitish-tomentose. Vermont to Pennsylvania.

4. Crataegus cordàta (Mill.) Ait. Washington Thorn. (Fig. 1994.)



Mespilus cordata Mill. Fig. Pl. *pl. 179.* 1760.
Crataegus populifolia Walt. Fl. Car. 147. 1788.
Crataegus cordata Ait. Hort. Kew. 2: 168. 1789.

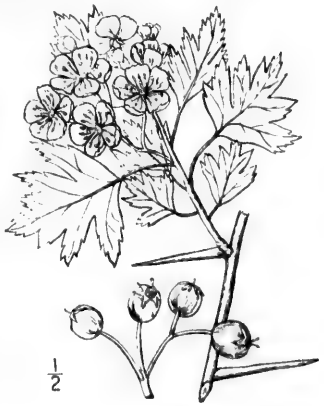
A tree, 15°–45° high, with maximum trunk diameter of about 18′, often lower and shrubby. Spines slender, 1′–2′ long; leaves slender-petioled, broadly ovate, generally sharply 3–7-lobed and serrate, acute or acuminate at the apex, truncate or cordate at the base, glabrous on both sides, 1′–3′ long; corymbs many-flowered, terminal; flowers 4″–6″ broad; pedicels glabrous; calyx glabrous or sparingly pubescent without, quite pubescent within, its lobes ovate; styles 5; fruit bright red, depressed-globose, 2″ high.

In woods and thickets, Virginia to Georgia, especially along the mountains, west to Illinois and Tennessee. Much planted for hedges; escaped from cultivation in southern New Jersey and Pennsylvania. Wood hard, reddish brown; weight per cubic foot 45 lbs. March–May.

5. Crataegus Oxyacántha L. Hawthorn. White or May Thorn. (Fig. 1995.)

Crataegus Oxyacantha L. Sp. Pl. 477. 1753.

A shrub or tree, sometimes attaining a height of 40° and trunk diameter of 1° or more. Thorns stout, numerous; leaves slender-petioled, glabrous on both sides or pubescent when young, sharply 3–7-lobed, broadly ovate or slightly obovate, acute or obtusish at the apex, broadly cuneate at the base, 1′–2′ long, the lobes serrate or entire; corymbs many-flowered; pedicels and calyx glabrous or sparingly pubescent, not glandular; flowers 5″–7″ broad, white or pink; calyx-lobes ovate; styles 1–3; fruit globose or globose-ovoid, about 3″ high.



Along roadsides and in thickets, sparingly escaped from cultivation. Wood hard, yellowish-white; weight per cubic foot 50 lbs. Introduced from Europe and native also of Asia. May–June. Called also Hathorne, Hedge-thorn, May Bush, May, Quickset.

6. Crataegus viridis L. Southern Thorn. (Fig. 1996.)

Crataegus viridis L. Sp. Pl. 476. 1753.
C. arborescens Ell. Bot. S. C. & Ga. 1: 550. 1821.

A small tree with maximum height of about 30° and trunk diameter of 18′, often without spines. Leaves slender-petioled, varying from ovate to lanceolate or somewhat obovate, glabrous on both sides or pubescent in the axils of the veins beneath, sharply serrate and usually somewhat lobed, mostly acute at each end, 1′–3′ long; corymbs many-flowered; pedicels and calyx glabrous or little pubescent; flowers 6″–9″ broad; calyx-lobes lanceolate; styles commonly 5; fruit globose or oval, about 3″ high, persistent into the winter.

Valley of the Mississippi from Missouri to Louisiana and Texas, east to South Carolina and Florida. Wood hard, reddish-brown; weight per cubic foot 40 lbs. March–April.

Crataegus viridis nitida Engelm.

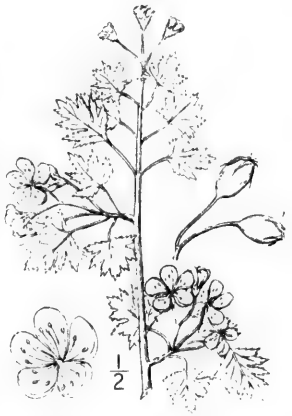
Leaves more shining; fruit larger, glaucous. Missouri and Arkansas. Perhaps a distinct species.

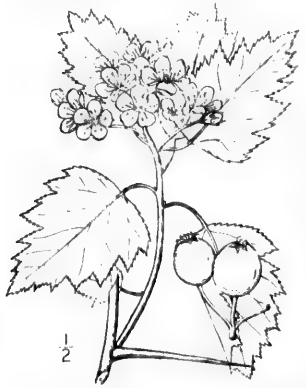
7. Crataegus apiifòlia (Marsh.) Michx. Parsley Haw. Parsley-leaved Thorn. (Fig. 1997.)

Mespilus apiifolia Marsh. Arb. Am. 89. 1785.
Crataegus apiifolia Michx. Fl. Bor. Am. 1: 287. 1803.

A shrub or small tree, reaching a maximum height of about 25° and trunk diameter of about 3′. Spines stout, 1′–2′ long; leaves slender-petioled, broadly ovate or nearly orbicular in outline, pubescent on both sides at least when young, obtuse or acutish at the apex, truncate or slightly cordate at the base, ½′–1½′ long, thin, pinnately and deeply 5–7-cleft, the lobes sharply serrate; corymbs numerous, several-flowered, the slender pedicels and calyx pubescent; flowers 4″–6″ broad; calyx-lobes linear, glandular; styles 1–3; fruit red, oval, 2″–3″ long.

In thickets, Virginia to Florida, west to Missouri and Texas. Wood hard, bright reddish-brown; weight per cubic foot 46 lbs. March–April.





8. Crataegus coccínea L. Scarlet Thorn or Haw. Red Haw. (Fig. 1998.)

Crataegus coccinea L. Sp. Pl. 476. 1753.

A shrub or sometimes a small tree, reaching a maximum height of about 30° and trunk diameter of 1°. Spines stout, 1½′–2′ long; leaves slender-petioled, broadly ovate or orbicular, acute or acuminate at the apex, mostly truncate or subcordate at the base, thin, or becoming firm, very sharply incised and serrate, the teeth glandular-tipped, glabrous or very nearly so beneath, 2′–3′ long; pedicels, bractlets and calyx somewhat glandular-pubescent; flowers numerous, 8″–14″ broad; calyx-lobes lanceolate; styles 3–5; fruit red, globose or oval, 5″–8″ in diameter, rarely hairy.

Thickets, Newfoundland to Manitoba, south to Florida and Texas. Wood hard, reddish-brown; weight per cubic foot 53 lbs. April–May.

Crataegus coccínea flabellàta (Spach) Britton, Mem. Torr. Club, 5: 183. 1894.
Mespilus flabellata Spach, Hist. Veg. 2: 63. 1834.

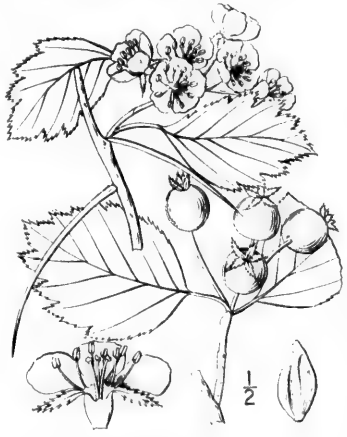
Leaves cuneate-narrowed at the base, very sharply incised-serrate, thick and shining when old. Quebec and New England to the Northwest Territory. Probably specifically distinct.

9. Crataegus rotundifòlia (Ehrh.) Borck. Glandular Thorn. (Fig. 1999.)

Mespilus rotundifolia Ehrh. Beitr. 3: 20. 1788.
Crataegus glandulosa Willd. Sp. Pl. 2: 1002. 1800. Not Soland. 1789.
C. coccinea var. *oligandra* T. & G. Fl. N. A. 1: 465. 1840.
C. rotundifolia Borck. in Roem. Arch. 1: Part 3, 87. 1798.

A shrub, similar to the preceding species, the spines slender. Leaves mostly smaller, slender-petioled, thin, becoming firm, dull, glabrous or very nearly so, oval, ovate, obovate, or some of them nearly orbicular, incised-serrate with gland-tipped teeth, or sometimes lobed, acute at the apex, most of them narrowed or cuneate at the base, the veins not very conspicuous; bractlets and calyx-lobes very glandular; flowers numerous, 8″–12″ broad; fruit oval or obovoid, red, 4″–8″ long.

Connecticut to Indiana, Florida and Alabama. Ascends to 3500 ft. in Virginia. Blooms later than *C. coccinea* where the two grow together. April–June.



10. Crataegus macracántha Lodd. Long-spined Thorn. (Fig. 2000.)

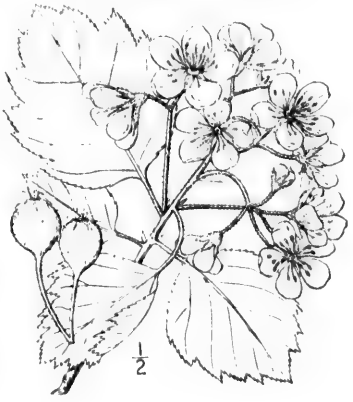
Crataegus macracantha Lodd.; Loudon, Arb. Brit. Ed. 2, 2: 819. 1854.
Crataegus coccinea var. *macracantha* Dudley, Bull. Cornell. Univ. 2: 33. 1886.

A shrub or small tree, the branches sometimes straggling, the bright brown thorns 2′–5′ long. Leaves dark green, dull, rather stout-petioled, 1½′–3½′ long, glabrous above, usually with a few hairs on the prominent veins beneath, sharply and often doubly serrate with gland-tipped teeth, acute or obtuse at the apex, narrowed or cuneate at the base; pedicels often pubescent; calyx and bractlets glandular; flowers numerous, 6″–8″ broad; fruit globose or oval, 3″–5″ in diameter.

Quebec to Dakota, south to Virginia and Missouri. May–June.

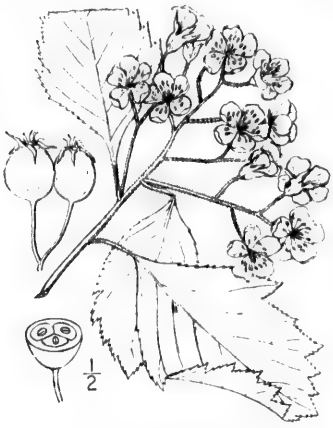
11. Crataegus móllis (T. & G.) Scheele. Red-fruited Thorn. (Fig. 2001.)

Crataegus coccinea var. *mollis* T. & G. Fl. N. A. 1: 465. 1840.
Crataegus subvillosa T. & G. Fl. N. A. 1: 465. As synonym. 1840.
Crataegus mollis Scheele, Linnaea, 21: 569. 1848.
Crataegus tomentosa var. *mollis* A. Gray, Man. Ed. 5, 160. 1867.



Similar to *Crataegus coccinea*, growing to about the same height. Leaves generally broadly ovate, truncate at the base, large (sometimes 5′ long), incised and sharply serrate with gland-tipped teeth, roughish above, very pubescent beneath, especially when young; corymbs many-flowered; twigs, petioles and calyx densely pubescent; calyx-lobes usually incised and glandular; flowers 8″–12″ broad; fruit bright red, 7″–12″ in diameter, hairy.

Thickets, Quebec to Michigan, Nebraska and Missouri, south to Pennsylvania, Louisiana and Texas. Wood hard, light reddish-brown; weight per cubic foot 50 lbs. April–May.



12. Crataegus tomentòsa L. Pear-thorn. Pear Haw. (Fig. 2002.)

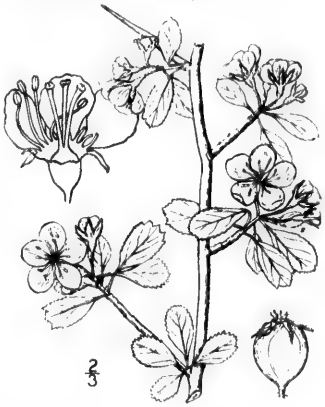
Crataegus tomentosa L. Sp. Pl. 476. 1753.

A shrub or small tree, sometimes reaching 25° in height and a trunk diameter of 18′. Spines stout, 1′–2½′ long; leaves petioled, broadly oval or ovate-oval, acute or acutish at the apex, narrowed or cuneate at the base, sharply dentate or somewhat lobed, not glandular, slightly scabrous above, pubescent, especially along the veins beneath, 2′–5′ long; corymbs many-flowered; twigs, petioles and calyx tomentose-pubescent; flowers about 6″ broad; calyx-lobes lanceolate, usually incised; styles 3–5; fruit dull red, obovoid or globose, about 6″ in diameter.

In thickets, southern Ontario to New Jersey and Georgia, west to Michigan and Missouri. Wood hard, reddish-brown; weight per cubic foot 47 lbs. May–June.

13. Crataegus flàva Ait. Summer or Yellow Haw. (Fig. 2003.)

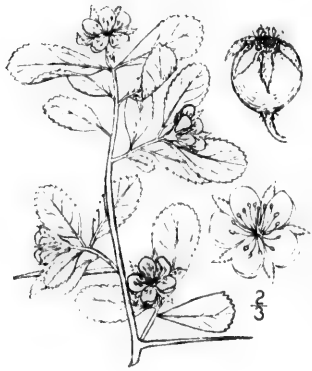
Mespilus hyematis Walt. Fl. Car. 148. 1788?
Crataegus flava Ait. Hort. Kew. 2: 169. 1789.
C. flava var. *pubescens* A. Gray, Man. Ed. 5, 160. 1867.
Crataegus flexispina Sarg. Gard. & For. 2: 424. 1889. Not *Mespilus flexispina* Muench. 1785.



A tree, with maximum height of about 20° and trunk diameter of 10′, usually very thorny. Leaves obovate, petioled, obtuse or short-pointed and irregularly glandular dentate at the apex, narrowed or cuneate and often entire at the base, ½′–1½′ long, pubescent on both sides or at length glabrate; corymbs few-flowered; pedicels and calyx pubescent; flowers 6″–9″ broad; calyx-lobes entire or glandular-serrate; styles commonly 5; fruit globose or somewhat pyriform, greenish, yellow or red, 5″–8″ in diameter.

In sandy thickets, Virginia to Florida, west to Missouri and Texas. April–May.

14. Crataegus uniflòra Muench. Dwarf Thorn. (Fig. 2004.)



Crataegus uniflora Muench. Hausv. 5: 147. 1770.
Crataegus parvifolia Ait. Hort. Kew. 2: 169. 1789.
Crataegus tomentosa Michx. Fl. Bor. Am. 1: 289. 1803. Not L. 1753.

A shrub, 3°–8° high or sometimes a small tree. Spines numerous, slender, 1′–2′ long; leaves obovate, coriaceous, nearly sessile, obtuse and crenate at the apex, cuneate and entire at the base, ½′–1¼′ long, more or less pubescent on both surfaces or glabrate and at length shining above; corymbs 1–7-flowered; twigs, pedicels and calyx pubescent; flowers 4″–5″ broad; calyx-lobes lanceolate, deeply incised, glandular, about equaling the petals; styles commonly 5; fruit globose or pyriform, 5″–8″ in diameter, yellow.

In sandy soil, southern New York to Florida, west to West Virginia and Louisiana. April–May.

15. Crataegus Vàiliae Britton. Vail's Haw. (Fig. 2005.)

Crataegus Vailiae Britton, Bull. Torr. Club, **24**: 53. 1896.

A shrub, 3°–6° high, the branches stout, light gray; thorns slender. Leaves oval, 1′–3′ long, short-petioled, pubescent on both sides, but becoming glabrate and slightly shining above, acute at both ends, or some of them obtuse at the apex, sharply serrate nearly all around, sometimes slightly 3-lobed, the petioles sparingly glandular, or glandless; stipules narrow, very glandular; corymbs 2–6-flowered; pedicels and calyx densely pubescent; calyx-lobes lanceolate, 4″–6″ long, deeply incised, glandular, nearly as long as the petals, reflexed in fruit; pome globose, yellowish green, 4″–5″ in diameter.

In thickets, Virginia and North Carolina. Leaves of young shoots nearly orbicular. May–June.

7. COTONEÁSTER Medic. Phil. Bot. **1**: 155. 1789.

Shrubs, with alternate stipulate coriaceous often evergreen leaves, and small white cymose or rarely solitary flowers. Calyx-tube adnate to the ovary, the limb 5-lobed, persistent. Petals 5, scarcely clawed. Stamens numerous; filaments mostly subulate. Ovary 2–5-celled or of 2–5 carpels, separate at the summit; styles 2–5; ovules 2 in each cavity or carpel, alike, erect. Pome ovoid, globose or top-shaped, the carpels bony when mature. [Name neo-Latin, Quince-star or Star-quince.]

About 20 species, natives of the Old World.

1. Cotoneaster Pyracántha (L.) Spach. Evergreen or Fire Thorn. Pyracanth. (Fig. 2006.)

Mespilus Pyracantha L. Sp. Pl. 478. 1753.

Crataegus Pyracantha Medic. Gesch. 84. 1798.

Cotoneaster Pyracantha Spach, Hist. Veg. **2**: 73. 1834.

A shrub, 3°–8° high. Spines slender, ½′–1′ long; leaves evergreen, glabrous on both sides, oval or slightly oblanceolate, crenulate, obtuse at the apex, usually narrowed at the base, somewhat shining above, 1′–2′ long, short-petioled; cymes terminal, compound, many-flowered; pedicels and calyx pubescent; calyx-lobes ovate; flowers about 3″ broad; styles 5; fruit scarlet, depressed-globose, about 2″ high, bitter.

In thickets, escaped from cultivation about Philadelphia and Washington. Native of southern Europe and western Asia. May.

Family 45. **DRUPÀCEAE** DC. Fl. Fran. 4: 479. 1805.

PLUM FAMILY.

Trees or shrubs, the bark exuding gum, the foliage, bark and seeds containing prussic acid, bitter. Leaves alternate, petioled, serrate, the small stipules early deciduous, the teeth and petiole often glandular. Flowers corymbose, umbelled, racemed or solitary, regular, mostly perfect. Calyx inferior, deciduous, free from the ovary, its tube obconic, campanulate or tubular, 5-lobed. Disk annular. Calyx-lobes imbricated in the bud. Petals 5, inserted on the calyx. Stamens numerous, inserted with the petals. Pistil 1 in our genera; ovary 1-celled, 2-ovuled; style simple; stigma mostly small and capitate. Fruit a drupe. Seed 1, suspended; endosperm none; cotyledons fleshy.

About 6 genera and 110 species, widely distributed, most abundant in the north temperate zone.

Drupe glabrous.	1. *Prunus.*
Drupe velvety.	2. *Amygdalus.*

1. **PRÙNUS** L. Sp. Pl. 473. 1753.

Shrubs or trees, mostly with edible fruits, the white or pink flowers variously clustered, the leaves conduplicate or convolute in vernation. Petals spreading. Stamens 15–20, distinct; filaments filiform. Style terminal; stigma peltate or truncate. Exocarp of the drupe fleshy, glabrous, the endocarp bony, smooth or a little roughened, globose or oval, or oblong and compressed. [Ancient Latin name of the Plum-tree.]

About 90 species, natives of the north temperate zone, tropical America and Asia. Besides the following, some 12 others occur in the southern and western parts of North America. The genus is often divided into *Prunus* proper, the plums, and *Cerasus*, the cherries; but other than flavor, there appears to be no salient feature separating the two groups.

* **Flowers in lateral scaly umbels or fascicles, expanding with or before the leaves.**

† Inflorescence umbellate, the clusters sessile or nearly so.

Leaves convolute in vernation; fruit mostly large; pit more or less flattened.
- Umbels several-flowered
  - Leaves abruptly acuminate; drupe red or yellow.
    - Calyx-lobes entire, pubescent within; fruit globose. — 1. *P. Americana.*
    - Calyx-lobes glandular-serrate; fruit subglobose or oval.
      - Calyx-lobes glabrous within; leaves oval or obovate. — 2. *P. nigra.*
      - Calyx-lobes pubescent on both sides; leaves ovate-lanceolate. — 3. *P. hortulana.*
  - Leaves acute or obtusish; drupe red or purple.
    - Leaves glabrous when mature.
      - Fruit red, with little bloom or none.
        - Leaves lanceolate; drupe thin-skinned. — 4. *P. angustifolia.*
        - Leaves ovate-lanceolate or oblong; drupe thick-skinned; western shrub. — 5. *P. Watsoni.*
      - Fruit dark purple, with a bloom; leaves ovate. — 6. *P. Alleghaniensis.*
    - Leaves pubescent, at least on the lower surface, when mature.
      - Drupe 8″–12″ in diameter; coast plants.
        - Leaves ovate or oval, acute; stone pointed at both ends. — 7. *P. maritima.*
        - Leaves orbicular, very obtuse; stone pointed at base. — 8. *P. Gravesii.*
      - Drupe 3″–5″ in diameter; prairie plant. — 9. *P. gracilis.*
  - Umbels only 1–2-flowered. — 10. *P. spinosa.*

Leaves conduplicate in vernation; fruit mostly small; pit mostly globose.
- Flowers 3″–6″ broad; low shrubs.
  - Leaves oblanceolate or spatulate; northern. — 11. *P. pumila.*
  - Leaves oval, oblong, or slightly obovate.
    - Petioles 4″–10″ long; drupe 4″–5″ in diameter; eastern. — 12. *P. cuneata.*
    - Petioles 2″–3″ long; fruit 6″–8″ in diameter; western. — 13. *P. Besseyi.*
- Flowers 9″–15″ broad; trees; leaves ovate.
  - Leaves glabrous; pedicels short; fruit sour. — 14. *P. Cerasus.*
  - Leaves pubescent beneath, at least on veins; pedicels long; fruit sweet. — 15. *P. Avium.*

† † Inflorescence more or less corymbose: leaves shining. — 16. *P. Pennsylvanica.*

* * **Flowers corymbose, terminating twigs of the season.** — 17. *P. Mahaleb.*

* * * **Flowers racemed, terminating branches of the season.**

Fruit red, astringent; leaves obovate or oval. — 18. *P. Virginiana.*

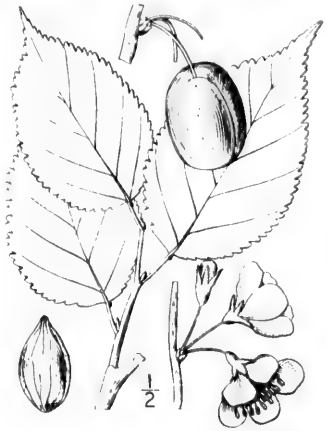
Fruit purple or purplish-black, sweet or bitter.
- Leaves oval or obovate; fruit purple; shrub or small tree. — 19. *P. demissa.*
- Leaves oblong-acuminate; fruit black; large tree. — 20. *P. serotina.*

1. Prunus Americàna Marsh. Wild Yellow or Red Plum. (Fig. 2007.)

Prunus Americana Marsh. Arb. Am. 111. 1785.

A shrub or small tree, maximum height about 35°, and trunk diameter about 12′; branches more or less thorny; bark thick. Leaves ovate or obovate, acuminate, nearly or quite glabrous when mature, usually pubescent when young, sharply and often doubly serrate, rounded at the base, slender-petioled; petioles usually glandless; flowers white, 8″–12″ broad, appearing in lateral sessile umbels before the leaves; pedicels 5″–9″ long; calyx-lobes pubescent within, entire; drupe globose, red or yellow, 9″–12″ in greatest diameter, the skin tough, bloom little or none, the stone somewhat flattened, its ventral edge acute or margined, the dorsal faintly grooved.

New York to Montana, Florida and Colorado. A southwestern form has very pubescent leaves. April–May. Fruit ripe Aug.–Oct.



2. Prunus nìgra Ait. Canada Plum. Horse Plum. (Fig. 2008.)

Prunus nigra Ait. Hort. Kew. 2: 165. 1789.
Prunus mollis Torr. Fl. U. S. 1: 470. 1824.

A tree, 20°–30° high, the trunk sometimes 10′ in diameter, the bark thin. Leaves oval, ovate or obovate, long-acuminate, pubescent when young, crenulate-serrate, narrowed, obtuse or subcordate at the base, 3′–5′ long; petioles stout, ¼′–1′ long, bearing 1 or 2 red glands near the blade; flowers in lateral umbels, expanding before the leaves, 1′–1¼′ broad; pedicels 6″–10″ long, slender, glabrous; calyx-lobes glandular-serrate, glabrous within, sometimes pubescent without; drupe oval, 1′–1½′ long, orange-red, thick-skinned, bloom little or none, the flesh adherent to the oval compressed stone, which is sharply ridged on the ventral edge, somewhat grooved on the dorsal.

Newfoundland to Manitoba, Massachusetts and Wisconsin. Wood hard, reddish-brown; weight per cubic foot 43 lbs. May. Fruit Aug.

3. Prunus hortulàna Bailey. Wild Goose Plum. (Fig. 2009.)

P. hortulana Bailey, Gard. & For. 5: 90. 1892.

A small tree, similar to the two preceding; branches spreading, bark thin. Leaves ovate-lanceolate to ovate, long-acuminate, somewhat peach-like, closely glandular-serrate, 4′–6′ long; petioles not 1′ long, usually bearing two glands near the blade; flowers in lateral umbels, expanding before the leaves; pedicels 5″–10″ long; calyx-lobes glandular-serrate, pubescent without and within; drupe subglobose or short-oval, bright red, thin-skinned, stone swollen, roughish, not margined; bloom little or none.

Illinois to Tennessee, Arkansas and Texas. Perhaps a hybrid. April–May.

Prunus hortulàna Mineri Bailey, Bull. Cornell Agric. Exp. Sta. 38: 23. 1892.

Leaves dull, thick, irregularly coarsely serrulate, conspicuously veiny beneath; stone nearly smooth; leaves varying to oblanceolate. Illinois to Tennessee and Missouri.

4. Prunus angustifòlia Michx. Chickasaw Plum. Hog Plum. (Fig. 2010.)

Prunus angustifolia Marsh. Arb. Am. 111. 1785.
Prunus Chicasa Michx. Fl. Bor. Am. 1: 284. 1803.

A small tree, sometimes 25° high, the trunk 7′ in diameter, the branches somewhat thorny. Leaves lanceolate or oblong-lanceolate, acute at the apex, serrulate, often rounded at the base, glabrous when mature, 3′–5′ long; flowers smaller than those of the preceding species, in lateral umbels, expanding before the leaves; drupe red, globose, 6″–9″ in diameter, nearly destitute of bloom, thin-skinned, its stone ovoid, hardly flattened, both edges rounded, one of them slightly grooved.

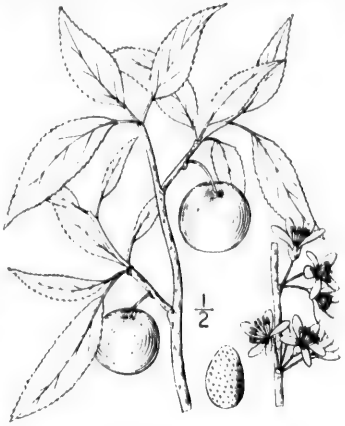
In dry soil, southern New Jersey to Florida, west to the Rocky Mountains. Supposed to be native in the Southwest. Wood soft, reddish-brown; weight per cubic foot 43 lbs. April. Fruit ripe May–July.

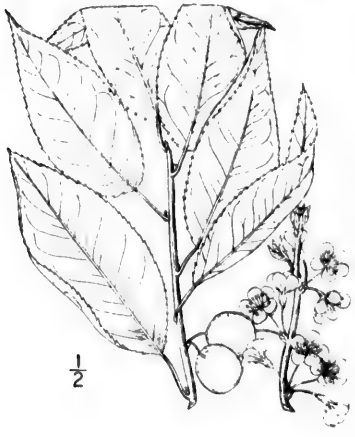
5. Prunus Wàtsoni Sargent. Watson's Plum. Sand Plum. (Fig. 2011.)

Prunus Watsoni Sargent, Gard. & For. 7: 134. *f.* 25. 1894.

A shrub, 6°–10° high, somewhat spiny. Leaves ovate to ovate-lanceolate, firm, acute or acuminate at the apex, rounded or narrowed at the base, finely crenulate-serrulate all around, 1′–2′ long, 6″–10″ wide, shining above, the petioles about ½′ long; flowers 5″–6″ broad, in numerous sessile lateral fascicles; pedicels 4″–6″ long, red, glabrous; petals oblong-obovate, short-clawed; fruit globose or somewhat elongated, about 9″ in diameter, orange-red, without a bloom, the flesh yellow; skin thick; stone oval, pitted, mostly rounded on both margins, abruptly flattened at the summit.

Sandy soil, Nebraska to Arkansas. April–May.





6. Prunus Alleghaniénsis Porter. Porter's Plum. (Fig. 2012.)

Prunus Alleghaniensis Porter, Bot. Gaz. 2: 85. 1877.

A low, straggling shrub or small tree, with maximum height of about 15° and trunk diameter of 5′, seldom thorny. Leaves ovate-oblong or obovate, acute or acuminate, finely and sharply serrate, rounded at the base, pubescent when young, glabrous or very nearly so when old; flowers similar to those of *P. Americana*, about 7″ broad; drupe globose-ovoid, about 5″ in greatest diameter, very dark purple with a conspicuous bloom; pulp pleasantly acid; stone slightly flattened, a shallow groove on one margin, a slight expansion on the other.

Barrens of Huntingdon Co., across the Alleghany Mountains to Clearfield Co., Pa. April. Fruit ripe in August.

7. **Prunus maritima** Wang. Beach Plum. (Fig. 2013.)

Prunus maritima Wang. Am. 103. 1781.

Prunus cerasifera Ehrh. Beitr. 4: 17. 1789.

Prunus sphaerocarpa Michx. Fl. Bor. Am. 1: 284. 1803.

A low much-branched shrub, 1°–7° high, not thorny. Leaves oval, ovate or obovate, finely and sharply serrate, acutish or acute at the apex, rounded at the base, pubescent beneath even when old; flowers white, numerous, showy, in sessile lateral umbels, expanding before the leaves, 5″–8″ broad; petals obovate; drupe globose, purple, ½′–1′ in diameter, sweet when ripe, covered with a bloom; stone little flattened, acute on one margin, slightly grooved on the other, usually pointed at both ends.

On seabeaches and in sandy soil near the coast, Virginia to New Brunswick. April–May. Fruit ripe in Sept. or Oct.

8. **Prunus Gràvesii** Small. Graves' Beach Plum. (Fig. 2014.)

Prunus Gravesii Small, Bull. Torr. Club, **24**: 45. 1897.

A low shrub, reaching a maximum height of about 4°, not thorny, the twigs of the season mostly puberulent. Leaves orbicular, oval-orbicular, or slightly obovate, 9″–18″ long, rounded, retuse or apiculate at the apex, obtuse or truncate at the base, pubescent, at least on the nerves beneath; flowers white, about 6″ broad, solitary or 2–3 together in lateral umbels, expanding with the leaves; petals suborbicular; drupe globose, 5″–8″ in diameter, nearly black, with a light blue bloom; stone nearly as thick as wide, pointed only at the base.

On a gravelly ridge, Groton, Connecticut. May–June. Fruit ripe in Sept.

9. **Prunus grácilis** Engelm. & Gray. Low Plum. (Fig. 2015.)

Prunus gracilis Engelm. & Gray, Bost. Journ. Nat. Hist. 5: 243. 1847.

A branching shrub, 1°–4° high, the foliage and young twigs densely soft-pubescent. Leaves short-petioled, ovate-lanceolate or oval, acute or acutish at both ends, sharply serrate, glabrate on the upper surface at maturity; flowers white, 3″–4″ broad, in sessile, lateral umbels, appearing before the leaves; pedicels slender, pubescent; drupe oval-globose, 4″–5″ in diameter; stone little flattened, nearly orbicular.

In sandy or dry soil, Tennessee to Kansas and Texas.

10. Prunus spinòsa L. Sloe. Blackthorn. Buckthorn. (Fig. 2016.)

Prunus spinosa L. Sp. Pl. 475. 1753.

A much-branched shrub with thorny branches, 2°–15° high. Leaves ovate or oblong, obtuse at the apex, narrowed or rounded at the base, serrate, nearly glabrous when mature; flowers white, 4″–6″ broad, appearing before the leaves, the lateral clusters only 1–2-flowered; drupe globose, nearly black with a bloom, in the wild state about 6″ in diameter; stone little flattened, acute on one edge.

Along roadsides, etc., Pennsylvania and New Jersey to Massachusetts. Naturalized or adventive from Europe. Called also Blackberry. April–May.

Prunus spinòsa insititia (L.) A. Gray, Man. Ed. 2, 112. 1856. BULLACE.

Prunus insititia L. Amoen. Acad. **4**: 273. 1755.

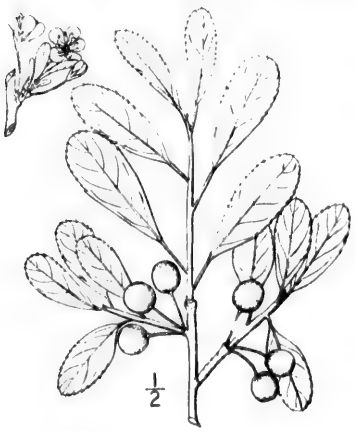
Taller; leaves and pedicels pubescent; branches less thorny; drupe ovoid-globose. Naturalized in eastern Massachusetts. Regarded by many authors as a species, and as the original of the cultivated European plums (*Prunus domestica* L.).

11. Prunus pùmila L. Sand Cherry. Dwarf Cherry. (Fig. 2017.)

Prunus pumila L. Mant. Pl. 75. 1767.
Cerasus pumila Michx. Fl. Bor. Am. **1**: 286. 1803.

Prostrate and spreading or ascending, much branched from the base, sometimes bushy, 6′–6° high. Leaves mostly oblanceolate or spatulate, acute or acutish at the apex, narrowed at the base, serrate, especially toward the apex, usually pale beneath and deep green above, glabrous or very nearly so on both sides when mature; flowers white, 4″–5″ broad, appearing with the leaves in sessile lateral umbels; clusters few-flowered; drupe 4″–6″ in diameter, dark red or nearly black when mature without bloom; flesh thin, acid.

On sandy or gravelly shores, New Brunswick to Manitoba, south to Maine, New Jersey and Michigan. April–May. Fruit ripe in August.



12. Prunus cuneàta Raf. Appalachian Cherry. (Fig. 2018.)

Prunus cuneata Raf. Ann. Nat. 11. 1820.

An erect shrub, 1°–4° high, the branches often strict, light colored. Leaves oval, oblong or obovate, obtuse or sometimes acute at the apex, narrowed or wedge-shaped at the base, more or less serrate with rather appressed teeth, rather thin, 1′–3′ long, sometimes nearly 1′ wide; petioles 4″–10″ long; flowers in umbels, appearing with the leaves, about 5″ broad; drupe globose, 4″–5″ in diameter when mature; pedicels 1′ long or less.

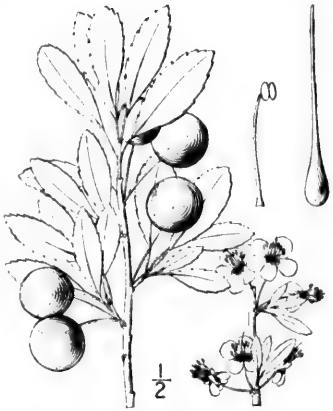
In wet soil, or among rocks, New Hampshire to Minnesota, North Carolina and Wisconsin.

13. Prunus Bésseyi Bailey. Western Sand Cherry. Bessey's Cherry. (Fig. 2019.)

Prunus Besseyi Bailey, Bull. Cornell Agric. Exp. Sta. 70: 261. 1894.

A shrub, 1°–4° high, the branches diffuse, spreading or prostrate, not strict. Leaves elliptic, oblong or oval, the teeth appressed, the apex and base mostly acute; petioles 2″–3″ long; stipules of young shoots often longer than the petiole; flowers in sessile umbels, expanding with the leaves, 4″–5″ broad; fruit 6″–8″ in diameter, on stout pedicels usually not more than 6″ long, bitterish and astringent, black, mottled or yellowish.

Prairies, Manitoba and Minnesota to Kansas and Utah. April–May.



14. Prunus Cérasus L. Sour Cherry. Egriot. (Fig. 2020.)

Prunus Cerasus L. Sp. Pl. 474. 1753.

A tree, reaching in cultivation the height of 50°, with trunk diameter of 3½°, but usually smaller. Leaves ovate or ovate-lanceolate, variously dentate, abruptly acute or acuminate at the apex, rounded at the base, glabrous on both sides, very resinous when young; flowers white, 8″–12″ broad, in sessile, lateral, very scaly umbels, expanding with the leaves or before them; pedicels little over 1½′ long in flower; drupe globose, 4″–6″ in diameter (larger in cultivation), black or red, sour, without bloom; stone globose.

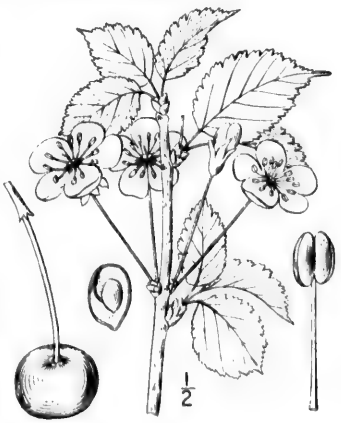
In woods and thickets, southern New York and Pennsylvania, escaped from cultivation. Native of Europe. Wood strong, reddish-brown; weight per cubic foot 54 lbs. April–May. Fruit June–July. Its leaves unfold several days later than those of *P. Avium* when growing with it. This, and the following species, in the wild state, are the originals of most of the cultivated cherries.

15. Prunus Àvium L. Wild or Crab Cherry. Mazard. Gean. Sweet Cherry. (Fig. 2021.)

Prunus Avium L. Fl. Suec. Ed. 2, 165. 1755.

A large tree, often 70° high, the trunk reaching 4° in diameter. Leaves ovate, oval, or slightly obovate, abruptly short-acuminate at the apex, obtuse or sometimes narrowed at the base, irregularly serrate or doubly serrate, pubescent on the veins beneath, or over the entire lower surface when young; flowers white, about 1′ broad, in scaly lateral umbels, expanding with the leaves; pedicels slender, 1′–2½′ long in flower; drupe globose, black or dark red, sweet.

In thickets and woodlands, escaped from cultivation, Connecticut to Pennsylvania and Virginia. Native of Europe. April–May.



16. Prunus Pennsylvánica L. f. Wild Red Cherry. Pin or Pigeon Cherry. (Fig. 2022.)

Prunus Pennsylvanica L. f. Suppl. 252. 1781.
Cerasus Pennsylvanica Lois. Nouv. Duham. 5: 9. 1812.

A small tree, with maximum height of about 35°, and trunk diameter of 1½°, sometimes shrubby. Leaves oval or lanceolate, acute or acuminate at the apex, mainly rounded at the base, glabrous and shining on both sides, serrulate, rather slender-petioled; flowers white, in lateral, corymbose, peduncled or sessile leafless clusters, unfolding with the leaves; pedicels slender, glabrous, 6″–12″ long; drupe globose, red, 2″–3″ in diameter, without bloom, its flesh thin and sour, its stone globular.

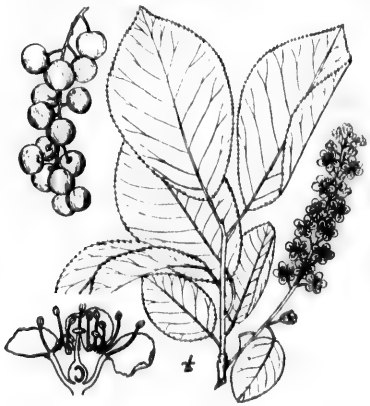
In rocky woods, and clearings, Newfoundland to Georgia, west to the Rocky Mountains. Wood soft, light brown; weight per cubic foot 31 lbs. April–June. Fruit ripe in August.

17. Prunus Mahàleb L. Mahaleb. Perfumed Cherry. (Fig. 2023.)

Prunus Mahaleb L. Sp. Pl. 474. 1753.
Cerasus Mahaleb Mill. Gard. Dict. Ed. 8, no. 4. 1768.

A small tree or shrub, with maximum height of about 25° and trunk diameter of 1°, generally flowering when but a few years old. Bark pale, smooth; leaves petioled, ovate, abruptly acute at the apex, rounded or slightly cordate at the base, glabrous on both sides, denticulate, fragrant; flowers white, about 5″ broad, in corymbs borne on short leafy branches of the season, unfolding with the leaves; drupe reddish-black, globose or globose-ovoid, about 4″ long, the flesh thin, the stone slightly flattened.

Roadsides and waste places, southern New York and eastern Pennsylvania, becoming frequent. Adventive from Europe. Wood hard, brown. Used in Europe for cabinet making. April–May. Fruit ripe July.



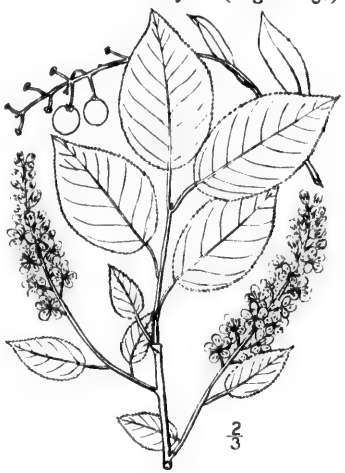
18. Prunus Virginiàna L. Choke Cherry. (Fig. 2024.)

Prunus Virginiana L. Sp. Pl. 473. 1753.
Cerasus Virginiana Lois. Nouv. Duham. 5: 3. 1812.

A shrub, 2°–10° high, or rarely a small tree, with gray bark. Leaves thin, obovate or broadly oval, abruptly acute or acuminate at the apex, rounded at the base, glabrous, or slightly pubescent along the veins beneath, sharply or doubly serrulate with slender teeth; petioles with several glands; flowers white, 4″–5″ broad, in erect or spreading mainly loosely-flowered racemes, terminating leafy branches of the season; petals suborbicular; pedicels 2″–3″ long, drupe red to nearly black, rarely yellow, globose, 4″–5″ in diameter, very astringent; stone globular.

Along river-banks and in rocky situations, Newfoundland to Manitoba and British Columbia, south to Georgia, Nebraska, Texas and Colorado. April–May. Fruit ripe in July or August.

19. Prunus demissa (Nutt.) Walp. Western Wild Cherry. (Fig. 2025.)



Cerasus demissa Nutt. in T. & G. Fl. N. A. 1: 411. 1840.

Prunus demissa Walp. Rep. 2: 10. 1843.

A shrub or small tree, with greatest height of about 30° and trunk diameter of 1¼°, but usually much smaller. Leaves similar to those of the preceding species, but thicker, acute or often obtusish at the apex, and with shorter teeth; flowers white, 4″–5″ broad; racemes generally dense, short or elongated, densely-flowered, terminating leafy branches; drupe dark purple or black, sweet or but slightly astringent, globose, 3″–4″ in diameter; stone globular.

Prairies and dry soil, Dakota to Nebraska and New Mexico, west to British Columbia and California. Wood hard, not strong, light brown; weight per cubic foot 43 lbs. Perhaps intergrades with the preceding species. May–July. Fruit ripe in August.

20. Prunus serótina Ehrh. Wild Black Cherry. Cabinet or Rum Cherry. (Fig. 2026.)

Prunus serotina Ehrh. Beitr. 3: 20. 1788.

Cerasus serotina Lois. Nouv. Duham. 5: 3. 1812.

A large tree, with maximum height of about 90° and trunk diameter of 4°, the bark rough and black. Leaves thick, oval, oval-lanceolate or ovate, acuminate or acute at the apex, narrowed or rounded at the base, glabrous, or pubescent along the veins beneath, serrate with appressed callous teeth; flowers similar to those of the two preceding species, the racemes elongated, spreading or drooping, terminating leafy branches, petals obovate; drupe globose, 4″–5″ in diameter; dark purple or black, sweet but slightly astringent.

In woods or open places, southern Ontario to Florida, Dakota, Kansas and Texas. Wood hard, strong, reddish-brown; weight per cubic foot 36 lbs; used in cabinet making. May. Fruit ripe Aug.–Sept.

Prunus serótina Smàllii Britton.

Cerasus serotina montana Small, Mem. Torr. Club, 4: 114. 1894. Not *P. montana* Marsh. 1785.

Leaves firm, coriaceous, coarsely serrate, pale beneath; racemes thick, divergent, rather few-flowered; calyx and filaments pubescent. Summit of White Top Mountain, Virginia.

2. AMÝGDALUS L. Sp. Pl. 472. 1753.

Trees or shrubs, with mostly lanceolate serrulate short-petioled leaves, and pink or white flowers solitary or clustered at the nodes of the twigs of the preceding season. Petals spreading. Stamens 20–30, distinct, the filaments filiform. Style and stigma as in *Prunus*. Exocarp of the fruit mostly fleshy, velvety in the following species; endocarp (stone) bony, deeply pitted or nearly smooth, oval or oblong, pointed, more or less compressed. [Name said to be Syrian.]

About 5 species, natives of Asia, to which are added by some authors 2 or 3 shrubs (genus *Emplectroclados* Torr.) of western North America.

1. Amygdalus Pérsica L. Peach.
(Fig. 2027.)

Amygdalus Persica L. Sp. Pl. 472. 1753.

A small tree, the purplish-brown twigs glabrous. Leaves mostly lanceolate or oblong-lanceolate, 3′–5′ long, 8″–18″ wide, glabrous on both sides, long-acuminate at the apex, usually narrowed at the base, finely serrulate nearly all around, thickish; petioles 1″–3″ long; flowers pink, ½′–2′ broad, scaly-bracted; drupe subglobose, grooved, softly velvety, 1½′–3′ in diameter.

Escaped from cultivation, southern New York to North Carolina. April–May.

Family 46. MIMOSÀCEAE Reichenb. Fl. Exc. 437. 1832.
MIMOSA FAMILY.

Herbs, shrubs or trees, with alternate mostly compound, commonly 2–3-pinnate leaves, the stipules various, and small regular perfect flowers in heads, spikes or racemes. Calyx 3–6-toothed, or 3–6-lobed, the teeth or lobes mostly valvate in the bud. Corolla of as many distinct or more or less united petals, also valvate. Stamens as many as the petals, or twice as many, or ∞, distinct, or monadelphous. Ovary 1-celled; ovules several or numerous; style simple. Fruit a legume. Seeds without endosperm; cotyledons fleshy.

About 30 genera and 1350 species, mostly of tropical distribution, a few in the temperate zones. This, and the three following families, are often united under the name LEGUMINOSAE.

Stamens numerous, at least more than 10. 1. *Acacia.*
Stamens only as many as the petals, or twice as many.
  Petals separate; pod smooth. 2. *Acuan.*
  Petals united to about the middle; pod spiny. 3. *Morongia.*

1. ACÀCIA Adans. Fam. Pl. 2: 319. 1763.

Shrubs or trees, some species nearly herbaceous, with bipinnate leaves, the ultimate leaflets usually small and numerous, or the leaves in many exotic species modified into flat simple phyllodes. Flowers small, in heads or spikes. Calyx campanulate, usually 4–5 toothed, or of 4 or 5 distinct sepals. Petals mostly 4 or 5, separate, united, or wanting. Stamens ∞, exserted; filaments filiform; pollen-grains cohering in 2's–6's. Ovary sessile or stipitate. Pod linear, oblong or oval, flat or swollen, often constricted between the seeds. [Greek, point, or thorn, many species being thorny.]

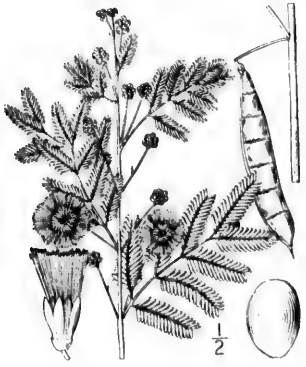
About 450 species, chiefly in subtropical regions, most abundant in Africa and Australia, a few in the temperate zones. Besides the following, some 15 others occur in the southern United States.

1. Acacia filiculoìdes (Cav.) Trelease. Prairie Acacia. (Fig. 2028.)

Mimosa filiculoides Cav. Ic. 1: 55. *pl. 78.* 1791.
Acacia filicina Willd. Sp. Pl. 4: 1072. 1806.
Acacia filiculoides Trelease; Branner & Coville, Rep. Geol. Surv. Ark. 1888: Part 4, 178. 1891.

A thornless shrub, varying from glabrous to hirsute-pubescent, sometimes herbaceous. Pinnae of the leaves 2–15 pairs, oblong in outline, 1′–2′ long; leaflets 10–50 pairs, oblong or linear-oblong, about 2″ long, less than 1″ wide, obtuse or acute, slightly inequilateral, 1-veined; heads globose, many-flowered, axillary, slender-peduncled, 6″–10″ in diameter; sepals distinct or nearly so; filaments yellow, 3–4 times as long as the sepals; pod linear, acute, often narrowed at the base, stipitate, mostly straight, 1′–2′ long, about 3″ wide, flat, its valves thin, reticulated, glabrous or pubescent, impressed between the seeds.

Prairies, Missouri and Kansas to Texas, Arizona and Mexico. May–July.



2. ÁCUAN Med. Theod. Sp. 62. 1786.

[DESMANTHUS Willd. Sp. Pl. 4: 1044. 1806.]
[DARLINGTONIA DC. Ann. Sci. Nat. 4: 97. 1825.]

Perennial herbs or shrubs, with bipinnate leaves, small stipules, and greenish or whitish small regular flowers in axillary peduncled heads or spikes. Flowers perfect, sessile, or the lowest sometimes staminate, neutral or apetalous. Calyx campanulate, its teeth short. Petals valvate, distinct, or slightly united or coherent below. Stamens 10 or 5, distinct, mainly exserted; anthers all alike. Ovary nearly sessile; ovules ∞. Pod linear, straight or curved, acute, glabrous, flat, several-seeded, 2-valved, the valves coriaceous or membranous.

About 10 species, natives of warm and tropical America, one of them widely distributed in tropical regions of the Old World.

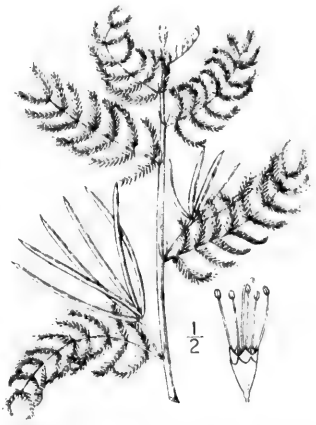
Pods few, linear, erect, straight. 1. *A. leptoloba.*
Pods numerous in globose heads, oblong, curved. 2. *A. Illinoensis.*

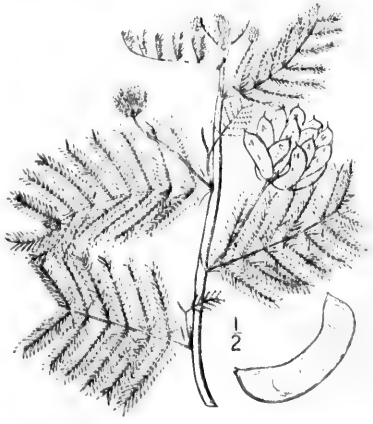
1. Acuan leptóloba (T. & G.) Kuntze. Prairie Mimosa. (Fig. 2029.)

Desmanthus leptolobus T. & G. Fl. N. A. 1: 402. 1840.
Acuan leptoloba Kuntze, Rev. Gen. Pl. 158. 1891.

Herbaceous, ascending, branched, stems rough-angled, 2°–3° long. Leaves short-petioled, bipinnate; pinnae 5–10 pairs, sessile; leaflets 10–24 pairs, sessile, linear-lanceolate, acute, inequilateral, rounded at the base, usually glabrous, 1½″–2″ long, ½″ wide or less; peduncles 6″–12″ long, few-flowered; stamens (always?) 5; pods 3–8, narrowly linear, acuminate, nearly straight, glabrous, about 3 times the length of the peduncle, 6–8-seeded.

Prairies, Kansas to Texas. Summer.





2. Acuan Illinoénsis (Michx.) Kuntze. Illinois Mimosa. (Fig. 2030.)

Mimosa Illinoensis Michx. Fl. Bor. Am. 2: 254. 1803.
Acacia brachyloba Willd. Sp. Pl. 4: 1071. 1806.
Desmanthus brachylobus Benth. in Hook. Journ. Bot. 4: 358. 1842.
Acuan Illinoensis Kuntze, Rev. Gen. Pl. 158. 1891.

Ascending or erect, glabrous or nearly so, stems angled, 1°–3° high. Foliage resembling that of the preceding species, but the pinnae and obtusish leaflets are sometimes more numerous; peduncles 1′–3′ long; pods numerous, densely capitate, oblong or lanceolate, strongly curved, 8″–12″ long, acute, slightly impressed between the 2–5 seeds.

Prairies and river-banks, Indiana to Kentucky, Florida, Minnesota and Texas. May–Sept.

3. MORÓNGIA Britton, Mem. Torr. Club, 5: 191. 1894.

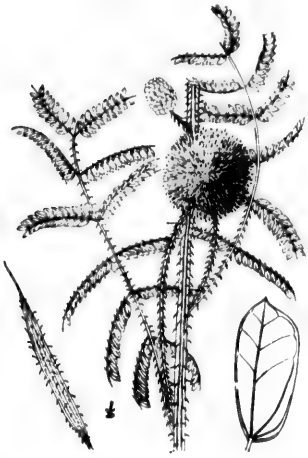
[SCHRANKIA Willd. Sp. Pl. 4: 1041. 1806. Not Medic. 1792.]
[LEPTOGLOTTIS DC. Mem. Leg. 451. 1823?]

Perennial herbs, or shrubs, mainly prostrate or procumbent, armed with recurved prickles. Leaves bipinnate, usually sensitive; leaflets numerous, small; stipules setaceous. Flowers regular, small, 4–5-parted, pink or purple, perfect or polygamous, in axillary peduncled heads or spikes. Petals united to the middle. Stamens usually 8–12, distinct or united at the base; anthers all alike. Ovary nearly sessile; ovules ∞. Pod linear, acute or acuminate, spiny all over, at length 4-valved, several seeded. [Named in honor of the late Rev. Thos. Morong, a contributor to this work.]

About 10 species, natives of warm and tropical America, 1 in tropical Africa.

Leaflets elliptic, strongly veined. 1. *M. uncinata.*
Leaflets linear-oblong, scarcely veined. 2. *M. angustata.*

1. Morongia uncinàta (Willd.) Britton. Sensitive-brier. (Fig. 2031.)

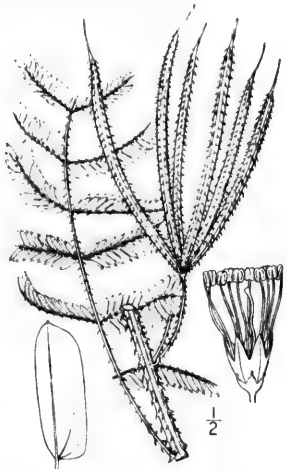


Schrankia uncinata Willd. Sp. Pl. 4: 1043. 1806.
Mimosa Intsia Walt. Fl. Car. 252. 1788. Not L. 1753.
Morongia uncinata Britton, Mem. Torr. Club, 5: 191. 1894.

Herbaceous, perennial, branched, decumbent, 2°–4° long. Stem, branches, petioles and peduncles thickly armed with hooked prickles ½″–1″ long; stem grooved and angled; leaves petioled; pinnae 4–8 pairs, distant; leaflets 8–15 pairs, obliquely elliptic, thick, obtusish and mucronate at the apex, inequilateral and rounded at the base, slightly ciliate on the margins, strongly marked with few elevated veins beneath, 2″–4″ long; heads globose, very dense, 8″–12″ in diameter; flowers pink; pods terete, very densely spiny, about 2′ long.

In dry soil, Virginia to Illinois and Nebraska, south to Florida and Texas. May–July.

2. Morongia angustàta (T. & G.) Britton. Narrow-leaved Sensitive-brier. (Fig. 2032.)



Schrankia angustata T. & G. Fl. N. A. 1: 400. 1840.
Morongia angustata Britton, Mem. Torr. Club, 5: 191. 1894.

Similar to the preceding species. Pinnae 3–6 pairs; leaflets numerous, linear-oblong, thin, acutish or obtuse, not mucronate or but very slightly so, very obscurely veined, not at all reticulated, 1½″–3″ long; peduncles shorter than the leaves; heads densely flowered, 5″–8″ in diameter; flowers pink; pods linear, sparingly or densely spiny, 2′–5′ long.

In dry soil, Virginia to Florida, west to Tennessee and Texas.

Family 47. **CAESALPINÀCEAE** Kl. & Garcke, Bot. Erg. Wald. 157. 1862.

SENNA FAMILY.

Trees, herbs or shrubs, with alternate simple or compound mostly stipulate leaves. Flowers mostly clustered and perfect, sometimes monoecious, dioecious or polygamous, nearly regular, or irregular. Calyx mostly of 5 sepals or 5-toothed. Petals usually 5, imbricated, and the upper (unpaired) one enclosed by the lateral ones in the bud. Stamens 10 or fewer in our genera, the filaments distinct, or more or less united. Ovary 1-celled, 1–many-ovuled. Fruit a legume, mostly dehiscent into 2 valves. Seeds with or without endosperm.

About 90 genera and 1000 species, mostly of tropical distribution.

Trees or shrubs; leaves simple; corolla irregular, apparently papilionaceous, but the lateral petals enclosing the upper one. 1. *Cercis.*
Herbs (all our species); flowers perfect; leaves pinnate or bipinnate; corolla nearly regular.
  Leaves pinnate, not punctate. 2. *Cassia.*
  Leaves bipinnate, glandular-punctate. 3. *Hoffmanseggia.*
Trees; leaves pinnate or bipinnate; flowers dioecious or polygamous.
  Receptacle short; stamens 3–5; pod flat, elongated. 4. *Gleditsia.*
  Receptacle elongated; stamens 10; pod oblong, woody. 5. *Gymnocladus.*

1. CÉRCIS L. Sp. Pl. 374. 1753.

Small trees or shrubs, with simple broad leaves, and pink flowers in short lateral fascicles borne on the twigs of preceding seasons. Calyx somewhat oblique, broadly campanulate,

5-toothed. Corolla irregular; petals 5; standard enclosed by the wings in the bud; keel larger than the wings. Stamens 10, distinct, declined; anthers all alike, short, versatile, longitudinally dehiscent. Ovary short-stipitate; ovules ∞. Pod linear-oblong or oblong, flat, margined along the upper suture, 2-valved at maturity, the valves thin, reticulate-veined. [Ancient name of the Old World Judas-tree.]

About 5 species, natives of North America, Europe and temperate Asia.

1. Cercis Canadénsis L. Red-bud. American Judas-tree. (Fig. 2033.)

Cercis Canadensis L. Sp. Pl. 374. 1753.

A tree, with greatest height of about 50° and trunk diameter of 1°, or often shrubby. Stipules membranous, small, caducous; leaves simple, petioled, cordate-orbicular, blunt-pointed, rather thick, glabrous, or pubescent along the veins beneath, 2′–6′ broad; flowers several together in sessile umbellate clusters, appearing before the leaves; pedicels slender, 4″–12″ long; corolla pink-purple, about 4″ long; pod short-stalked in the calyx, linear-oblong, acute at each end, glabrous, 2′–3′ long, 6″ wide, several-seeded.

In rich soil, southern Ontario and New Jersey to Minnesota, south to Florida and Texas. Wood hard, weak, dark reddish-brown; weight per cubic foot 40 lbs. April.

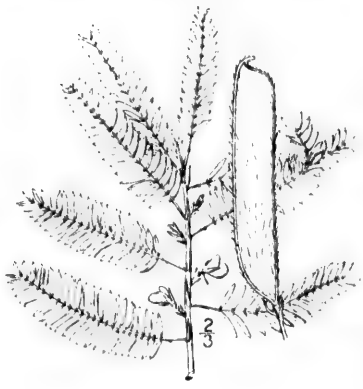
2. CÁSSIA L. Sp. Pl. 376. 1753.

Herbs, shrubs, or in tropical regions trees, with evenly pinnate leaves, and mainly (in all our species) yellow flowers. Calyx-teeth nearly equal, generally longer than the tube. Corolla nearly regular; petals 5, spreading, nearly equal, imbricated, clawed. Stamens usually 10, sometimes 5, often unequal and some of them imperfect; anthers all alike, or those of the lower stamens larger, opening by 2 pores at the summit. Ovary sessile or stalked; ovules ∞. Pod flat or terete, often curved, septate or continuous between the seeds. Seeds numerous. [Ancient name.]

About 275 species, of wide distribution in warm and temperate regions, very abundant in tropical America. Besides the following, about 20 others occur in the southern and southwestern States.

Leaflets linear or oblong, numerous, 3″–10″ long; plants 6′–18′ high.
- Flowers 2″–4″ broad, short-pedicelled; anthers 5. — 1. *C. nictitans.*
- Flowers 1′–1½′ broad, slender-pedicelled; anthers 10. — 2. *C. Chamaecrista.*

Leaflets ovate, oblong or obovate, 1′–2′ long; plants 1°–5° high.
- Leaflets 6 or 4, broadly obovate. — 3. *C. Tora.*
- Leaflets 8–18, oblong or ovate-lanceolate.
  - Perennial; leaflets oblong, obtuse. — 4. *C. Marylandica.*
  - Annual; leaflets ovate-lanceolate, acute or acuminate. — 5. *C. occidentalis.*



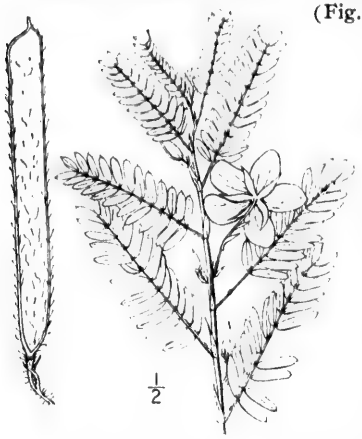
1. Cassia nictitans L. Sensitive Pea. Wild Sensitive-plant. (Fig. 2034.)

Cassia nictitans L. Sp. Pl. 380. 1753.

Annual, erect or decumbent, branching, more or less pubescent, 6′–15′ high. Stipules subulate-linear, persistent; leaves petioled, sensitive, bearing a small gland near the base of the petiole; leaflets 12–44, linear-oblong, obtuse and mucronate at the apex, rounded and oblique at the base, inequilateral, 3″–8″ long, 1″–1½″ wide; flowers 2–3 together in the axils, short-pedicelled, 2″–4″ broad; calyx-lobes acute or acuminate; stamens 5, all perfect; pod linear, nearly glabrous, or pubescent, 1′–1½′ long, 2′–2½′ wide.

In dry soil, Maine to Georgia, west to Indiana Kansas and Texas. Southern plants usually have more numerous leaflets than northern. July–Oct.

2. Cassia Chamaecrista L. Partridge Pea. Large-flowered Sensitive Pea. (Fig. 2035.)



Cassia Chamaecrista L. Sp. Pl. 379. 1753.
C. fasciculata Michx. Fl. Bor. Am. 1: 262. 1803.

Annual, erect or spreading, widely branched, pubescent or nearly glabrous, 1°–2½° high. Stipules subulate-linear, persistent; leaves petioled, with a sessile gland on the petiole, sensitive; flowers 2–4 together in the axils, 1′–1½′ broad, slender-pedicelled, showy, some of the petals often purple spotted; leaflets 20–30, linear-oblong or the upper lanceolate, obtuse, mucronate, inequilateral, oblique at the base, 4″–10″ long, 1½″–2″ wide; calyx-lobes long-acuminate; stamens 10, all perfect; pod linear, pubescent or glabrate, 1½′–2½′ long, 2″–3″ wide.

In dry soil, range nearly the same as that of the preceding species, but extending somewhat farther west and to Uruguay and Bolivia. July–Sept.

Cassia Chamaecrista robústa Pollard, Mem. Torr. Club, 21: 218. 1894.

Taller, stems stouter, densely pubescent; flowers larger. Kentucky to Alabama and Mississippi.

3. Cassia Tòra L. Low Senna. (Fig. 2036.)

Cassia Tora L. Sp. Pl. 376. 1753.
Cassia obtusifolia L. Sp. Pl. 377. 1753.

Annual, glabrous, 1½°–2° high, branched or simple. Stipules linear-subulate, at length deciduous; leaves petioled, the gland borne between or above the lowest pair of leaflets; leaflets 2–4 pairs, thin, obovate, obtuse and mucronulate at the apex, narrowed or rounded at the base, 1′–1½′ long, often 1′ wide; flowers 6″–12″ broad, few, in short axillary racemes; calyx-lobes oblong, obtuse; stamens 10, the anthers of the upper 3 imperfect; pod linear, very slender, strongly curved, 4′–6′ long, about 1½″ wide.

Along rivers, southern Pennsylvania to Indiana and Missouri, south to Florida and Mexico, and throughout tropical America and the warmer parts of the Old World. July–Oct.

4. Cassia Marylándica L. Wild or American Senna. (Fig. 2037.)

Cassia Marylandica L. Sp. Pl. 378. 1753.

Perennial, glabrous or pubescent with a few scattered hairs, 3°–8° high, little branched. Stipules subulate-linear, caducous; leaves petioled, the gland borne near the base of the petiole; leaflets 12–20, oblong or lanceolate-oblong, obtuse or obtusish, mucronate, rounded at the base, 1′–2′ long, 3″–6″ wide; flowers 7″–9″ broad, numerous in axillary racemes on the upper part of the plant; calyx-lobes oblong, obtuse; stamens 10, the upper 3 imperfect; pod linear, pubescent or becoming glabrous, 3′–4′ long, 3″ wide, curved.

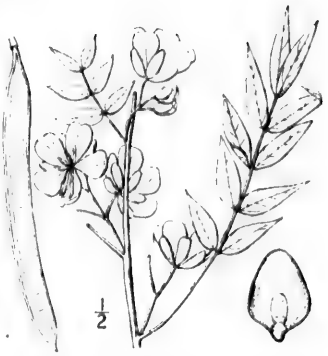
In swamps and wet soil, New England to Florida, west to Michigan, Nebraska and Louisiana. July–Aug.

5. Cassia occidentàlis L. Coffee Senna. (Fig. 2038.)

Cassia occidentalis L. Sp. Pl. 377. 1753.

Annual, glabrous, much branched, erect, 4°–6° high. Stipules caducous; gland borne near the base of the petiole; leaflets 8–12, ovate or ovate-lanceolate, acute or acuminate at the apex, rounded at the base, 1′–2′ long, 4″–9″ wide; flowers 7″–9″ broad, in short axillary racemes; stamens 10, the upper 3 imperfect; calyx-lobes oblong, obtuse; pod linear, glabrous, 4′–6′ long, about 3″ wide, somewhat curved, its margins thickened.

In waste places, Virginia to Indiana, south to Florida and Mexico, and throughout tropical America, extending to Chili and Uruguay. Also in the warmer parts of the Old World. In our area apparently adventive from the South. The seeds are known as Negro or Magdad Coffee. July–Aug.

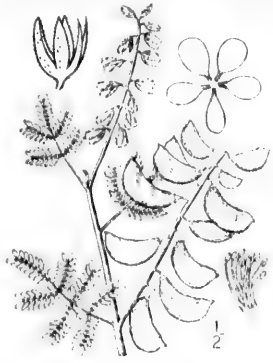


3. HOFFMANSÉGGIA Cav. Icones, **4**: 63. *pl. 392, 393.* 1797.

Herbs, or low shrubs, with glandular-punctate bipinnate leaves, small stipules, and yellow flowers in terminal or lateral racemes. Calyx deeply 5-parted, the lobes nearly equal. Petals 5, oval or oblong, imbricated, nearly equal. Stamens 10, distinct, slightly declined; filaments often glandular at the base; anthers all alike, longitudinally dehiscent. Ovary nearly sessile; ovules ∞. Pod flat, linear, oblong or ovate, curved or straight, 2-valved, several-seeded. [In honor of Joh. Centurius, Graf Hoffmansegge, a writer on Portuguese botany.]

About 20 species, natives of western America and South Africa. Besides the following, some 9 others occur in the southwestern United States.

Leaflets black-punctate; pod obliquely oblong. 1. *H. Jamesii.*
Leaflets not punctate; pod linear-oblong. 2. *H. Falcaria.*



1. Hoffmanseggia Jàmesii T. & G. James' Hoffmanseggia. (Fig. 2039.)

Pomaria glandulosa Torr. Ann. Lyc. N. Y. **2**: 193. 1826. Not Cav. 1799.
Hoffmanseggia Jamesii T. & G. Fl. N. A. **1**: 393. 1840.
Caesalpinia Jamesii Fisher, Coult. Bot. Gaz. **18**: 123. 1893.

Herbaceous, glandular black-punctate and finely pubescent, branching at the base from a deep woody root, stems 6′–12′ high. Stipules subulate; leaves petioled, bipinnate; pinnae 5–7; leaflets 9–19, oval or oblong, obtuse at each end, inequilateral, 1¼″–3″ long; racemes terminal, or lateral (opposite the leaves), elongated; flowers yellow, distant, deflexed, 3″–4″ long, the upper petal spotted with red; pod flat, obliquely oblong, black-punctate, about 1′ long and 5″ wide, 2–3-seeded, tipped with the base of the style.

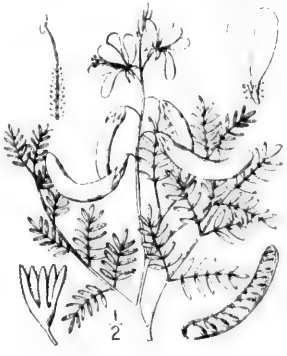
Prairies, Kansas to Texas, Arizona and New Mexico. June–July.

2. Hoffmanseggia Falcària Cav. Sickle-fruited Hoffmanseggia. (Fig. 2040.)

Hoffmanseggia Falcaria Cav. Icones, **4**: 63. *pl. 392.* 1797.
Hoffmanseggia stricta Benth.; A. Gray, Pl. Wright. **1**: 56. 1852.
Caesalpinia Falcaria Fisher, Coult. Bot. Gaz. **18**: 122. 1893.

Herbaceous, puberulent, not black-punctate, the glands of the peduncles and petioles stalked; stems ascending or decumbent, 1° high or less. Stipules ovate; leaves slender-petioled, bipinnate; pinnae 7–11; leaflets 12–21, oblong, obtuse, 1¼″–3″ long; racemes few-several-flowered, elongating in fruit; pod flat, linear-oblong, curved or nearly straight, 1′–1¼′ long, about 3″ wide, blunt, 8–12-seeded, the fruiting pedicels recurved.

Kansas (according to Fisher) to Texas, west to California. Also in Central and South America. April–June.

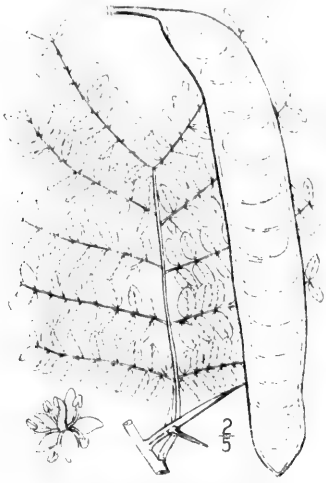


4. GLEDÍTSIA L. Sp. Pl. 1056. 1753.

Large thorny trees, with evenly once or twice pinnate leaves, small stipules, and small greenish polygamous flowers in slender axillary spicate racemes. Calyx campanulate, 3–5-cleft. Petals 3–5, equal, sessile, inserted at the summit of the calyx-tube. Stamens 6–10, distinct; anthers all alike, longitudinally dehiscent. Ovary rudimentary or none in the staminate flowers, in the fertile ones nearly sessile, elongated or ovoid. Ovules 2–∞. Pod linear or oval, flat, nearly straight, or twisted at maturity, coriaceous, tardily dehiscent, 1-seeded or many-seeded, pulpy between the seeds. [In honor of J. T. Gleditsch, 1714–1786, German botanist, the name often spelled *Gleditschia*.]

About 5 species, natives of eastern North America and Asia.

Pod linear-oblong, elongated, many-seeded. 1. *G. triacanthos.*
Pod obliquely oval, short, 1-seeded. 2. *G. aquatica.*

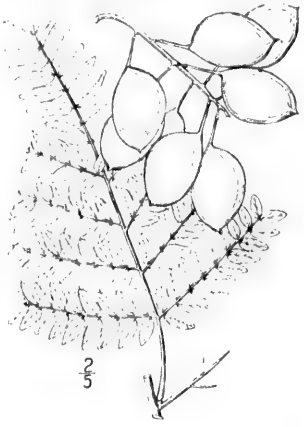


1. Gleditsia triacánthos L. Honey or Sweet Locust. Three-thorned Acacia. (Fig. 2041.)

Gleditsia triacanthos L. Sp. Pl. 1056. 1753.

A large tree, with rough bark, maximum height about 140° and trunk diameter 5½°, usually armed with numerous stout branching or simple thorns. Leaves petioled, 1–2-pinnate; leaflets short-stalked, oblong-lanceolate or oval, obtuse at each end, inequilateral at the base, glabrous above, often pubescent on the veins beneath, crenulate, 8″–15″ long; racemes solitary or clustered, slender, drooping, dense, 3′–5′ long; flowers greenish, about 2″ broad; pod linear-oblong, 1°–1½° long, 1′–1½′ wide, stalked, glabrous and shining, twisted, many-seeded, pulpy within, sometimes eaten.

In woods, western New York and Ontario to Michigan, Georgia, Kansas and Texas. Naturalized and extensively planted further east. Wood durable, bright brownish-red; weight per cubic ft. 42 lbs. May–July.



2. Gleditsia aquática Marsh. Water or Swamp Locust. (Fig. 2042.)

Gleditsia aquatica Marsh. Arb. Am. 54. 1785.
Gleditsia monosperma Walt. Fl. Car. 254. 1788.

A tree, with maximum height of about 60°, and trunk diameter of 2½°. Foliage similar to that of the preceding species, but the leaflets thicker, darker green, usually larger, ovate-lanceolate or lanceolate in outline, the margins more conspicuously crenulate; racemes drooping, elongated; pod obliquely oval, flat, glabrous, narrowed at each end, slender-stalked, 1′–½′ long, 9″–12″ wide, 1-seeded, not pulpy within.

In swamps, Indiana to Missouri, south to South Carolina, Florida and Louisiana. Wood very hard, bright reddish-brown; weight per cubic ft. 46 lbs. July.

5. GYMNÓCLADUS Lam. Encycl. 1: 733. 1783.

Trees, with bipinnate leaves, and showy white dioecious or polygamous flowers in terminal racemes. Calyx tubular, 5-lobed, the lobes narrow, nearly equal. Petals 5 (rarely 4), oblong or oval, nearly equal, imbricated, inserted at the top of the calyx-tube. Stamens 10, distinct, shorter than the petals and inserted with them; filaments pubescent; anthers all alike, longitudinally dehiscent. Ovary rudimentary, or none in the staminate flowers, sessile and many-ovuled in the pistillate and polygamous ones; style straight. Pod oblong, thick, large, coriaceous, flat, pulpy between the seeds, 2-valved. [Greek, naked-branch.]

A monotypic genus of eastern North America.

1. Gymnocladus dioica (L.) Koch. Kentucky Coffee-tree. (Fig. 2043.)

Guilandina dioica L. Sp. Pl. 381. 1753.
Gymnocladus Canadensis Lam. Encycl. 1: 733. 1783.
Gymnocladus dioicus Koch, Dendrol. 1: 5. 1869.

A large forest tree, with rough bark, maximum height about 100°, and trunk diameter of 3°. Leaves large, bipinnate, petioled; pinnae 5–9, odd or evenly pinnate; leaflets 7–15 (or the lowest pair of pinnae of but a single leaflet), ovate, acute or acuminate at the apex, rounded at the base, glabrous or pubescent on the veins beneath, ciliate on the margins, 1′–3′ long; racemes many-flowered, elongated; flowers nearly white, slender-pedicelled, 8″–9″ long; pod 5′–10′ long, about 2′ wide, the valves thick and coriaceous.

Rich woods, southern Ontario to Pennsylvania, Tennessee, Minnesota, Nebraska and the Indian Territory. Wood soft, strong, light reddish-brown; weight per cubic foot 43 lbs. The fruit called Coffee-nut. May–June.

Family 48. **KRAMERIÀCEAE** Dumort. Anal. Fam. 20. 1829.

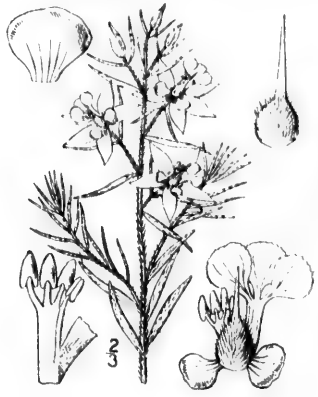
KRAMERIA FAMILY.

Pubescent herbs, or low shrubs, with alternate simple or digitately 3-foliolate leaves, and purple or purplish, solitary or racemed, irregular perfect flowers. Peduncles 2-bracted at or above the middle. Stipules wanting. Sepals 4 or 5, usually large, the outer one commonly wider than the others. Petals usually 5, smaller than the sepals, the 3 upper ones long-clawed, often united by their claws, or the middle one of the 3 wanting, the 2 lower ones reduced to suborbicular fleshy glands. Stamens 3 or 4, monadelphous, at least at the base; anther-sacs opening by a terminal pore. Ovary 1-celled, or partly 2-celled; ovules 2, collateral, anatropous, pendulous; style slender, acute or truncate. Fruit globose, or compressed, spiny, indehiscent, 1-seeded. Seed without endosperm; cotyledons fleshy.

The family consists of only the following genus, with about 15 species, distributed from the southern United States to Chile. It has often been included in the POLYGALACEAE, but its close affinity to *Cassia* and related genera indicates that it should be placed next to the CAESALPINACEAE.

1. **KRAMÈRIA** Loefl. Iter Hisp. 195. 1758.

[In honor of Johann Georg Heinrich Kramer, an Austrian physician of the last century.]



1. Krameria secundiflòra DC. Linear-leaved Krameria. (Fig. 2044.)

Krameria secundiflora DC. Prodr. 1: 341. 1824.

A perennial appressed-pubescent herb from a thick woody root, the stems prostrate or ascending, branched, often 1° long or more. Leaves numerous, linear, linear-lanceolate or linear-oblong, sessile, simple, entire, about 1′ long, ½″–2″ wide, acute, tipped with a minute prickle; peduncles solitary, axillary, 1-flowered, sometimes secund, as long as the leaves, or shorter, bearing 2 leaf-like bracts just below the flower; flowers about 1′ broad, the sepals purple within, pubescent without; claws of the 3 upper petals united; stamens 4, monadelphous; fruit globose, pubescent, very spiny, about ½′ in diameter.

Florida to Kansas, New Mexico and Mexico. April–June.

Family 49. **PAPILIONACEAE** L. Ord. Nat. 1764.

Pea Family.

Herbs, shrubs, vines or trees, with alternate mostly compound stipulate leaves, and irregular (papilionaceous) perfect or sometimes polygamo-dioecious flowers, mainly in spikes, heads, racemes or panicles. Calyx 4–5-toothed, or 4–5-cleft, the teeth or lobes unequal or equal; sometimes 2-lipped. Petals more or less united, or separate, perigynous or hypogynous, usually consisting of a broad upper one (standard, banner), two lateral ones (wings), and two front ones more or less united (forming the keel); the standard encloses the wings in the bud. Stamens monadelphous, diadelphous, or sometimes separate, 10 in most of the genera, sometimes 9, rarely 5. Pistil 1, simple, superior; ovary mainly 1-celled, sometimes 2-celled by the intrusion of the sutures, or several-celled by cross-partitions; style simple; ovules 1–many, anatropous or amphitropous. Fruit a legume, 1–many-seeded, dehiscent into 2 valves, or indehiscent, in one tribe a loment. Seeds mostly without endosperm; cotyledons thick.

There are about 310 genera and 5000 species, most abundant in temperate and warm regions. The family is also known as Phaseolaceae, and is included by some authors in the Leguminosae.

*** The 10 stamens distinct.**

Leaves pinnate. — Tribe 1. Sophoreae.
Leaves digitate (in ours 3-foliolate), or simple. — Tribe 2. Podalyrieae.

*** * The stamens monadelphous or diadelphous.**

Herbs, shrubs, woody vines or trees, the leaves not tendril-bearing.
  Pod not a loment, 2-valved or indehiscent.
    Foliage not glandular-dotted (except in *Glycyrrhiza*, which has many-seeded pods).
      Stamens monadelphous; anthers of 2 kinds. — Tribe 3. Genisteae.
      Stamens diadelphous (except in *Ononis*); anthers all alike.
        Leaves, in our species, 3-foliolate, rarely 1-foliolate.
          Leaflets denticulate. — Tribe 4. Trifolieae.
          Leaflets entire. — Tribe 5. Loteae.
        Leaves pinnately several–many-foliolate (except in *Orophaca*). — Tribe 7. Galegeae.
    Foliage glandular-dotted; pod indehiscent, 1–2-seeded; herbs. — Tribe 6. Psoraleae.
  Pod a loment; herbs. — Tribe 8. Hedysareae.
Herbaceous vines, or herbs; leaves evenly pinnate, with tendrils. — Tribe 9. Vicieae.
Vines, ours herbaceous, or erect herbs; leaves odd-pinnate, mostly 3-foliolate, without tendrils. — Tribe 10. Phaseoleae.

Tribe 1. Sophoreae.

Our species herbs; flowers racemed. — 1. *Sophora.*
Trees; flowers panicled. — 2. *Cladrastis.*

Tribe 2. Podalyrieae.

Ovary sessile, or nearly so; pod flat in our species. — 3. *Thermopsis.*
Ovary distinctly stipitate; pod inflated. — 4. *Baptisia.*

Tribe 3. Genisteae.

Herbs, with simple or 5–11-foliolate leaves.
  Leaves simple; pod inflated. — 5. *Crotalaria.*
  Leaves 5–11-foliolate; pod flattened. — 6. *Lupinus.*
Shrubs, with 1–3-foliolate leaves.
  Calyx divided into 2 lips; leaves very prickly. — 7. *Ulex.*
  Calyx cleft into 2 lips to about the middle.
    Calyx-teeth long. — 8. *Genista.*
    Calyx-teeth short. — 9. *Cytisus.*

Tribe 4. Trifolieae.

Flowers spiked, or capitate; pods curved, or coiled. — 10. *Medicago.*
Flowers in long racemes; pods coriaceous. — 11. *Melilotus.*
Flowers capitate or umbelled; pods straight, membranous. — 12. *Trifolium.*

Tribe 5. Loteae.

A single genus in our area. — 13. *Lotus.*

Tribe 6. Psoraleae.

Leaves digitately 3–5-foliolate, or pinnately 3-foliolate. — 14. *Psoralea.*
Leaves pinnately 5–many-foliolate.
  Stamens 10 or 9, monadelphous, at least at the base.
    Corolla of only 1 petal (the standard). — 15. *Amorpha.*
    Corolla of 5 petals, the wings and keel united to the filament-tube. — 16. *Parosela.*
  Stamens only 5, monadelphous. — 17. *Kuhnistera.*

Tribe 7. Galegeae.

Standard very broad, ovate or orbicular.
  Herbs; leaves odd-pinnate.
    Pod 4-angled in our species. — 18. *Indigofera.*
    Pod flat. — 19. *Cracca.*

High-climbing woody vines. 20. *Kraunhia.*
Trees or shrubs. 21. *Robinia.*
Herbs; leaves evenly pinnate. 22. *Sesban.*
Standard narrow; our species all herbs.
Pod not prickly; foliage not glandular-punctate.
Keel of the corolla blunt.
Leaves pinnate, or simple.
Pod not flattened, swollen, or one or both sutures intruded.
Pod not much swollen, fleshy, leathery or papery. 23. *Astragalus.*
Pod much inflated, membranous. 24. *Phaca.*
Pod flat, both sutures prominent externally. 25. *Homalobus.*
Leaves 3-foliolate. 26. *Oxyphaca.*
Keel of the corolla acute. 27. *Spiesia.*
Pod prickly; foliage glandular-punctate. 28. *Glycyrrhiza.*

Tribe 8. HEDYSAREAE.

Leaves odd-pinnate.
Flowers purplish, umbellate. 29. *Coronilla.*
Flowers purple or white, racemose. 30. *Hedysarum.*
Flowers yellow, small. 31. *Æschynomene.*
Leaves 4-foliolate or 2-foliolate. 33. *Zornia.*
Leaves 3-foliolate, the terminal leaflet stalked.
Flowers yellow. 32. *Stylosanthes.*
Flowers purple, blue or white.
Pod of several joints; leaflets stipellate. 34. *Meibomia.*
Pod of 1 or 2 joints; leaflets not stipellate. 35. *Lespedeza.*

Tribe 9. VICIEAE.

Style slender, with a tuft of hairs at the summit. 36. *Vicia.*
Style flattened, bearded along the inner side. 37. *Lathyrus.*

Tribe 10. PHASEOLEAE.

Style bearded along the inner side; rachis not thickened at the insertion of the flowers; keel of corolla not curved nor coiled. 39. *Clitoria.*
Style glabrous, or slightly pubescent below; keel of corolla not curved nor coiled.
Standard spurred at the base. 38. *Bradburya.*
Standard not spurred.
Flowers blue, purple, purplish, or white.
Leaves odd-pinnate; leaflets 5–7. 41. *Apios.*
Leaves 3-foliolate, rarely 1-foliolate.
Calyx tubular, not bracteolate. 40. *Falcata.*
Calyx short, bracteolate. 42. *Galactia.*
Flowers yellow. 43. *Rhynchosia.*
Style bearded along the inner side; rachis thickened at the insertion of the flowers.
Keel of the corolla spirally coiled; flowers racemed. 44. *Phaseolus.*
Keel of the corolla strongly incurved; flowers purple, capitate. 45. *Strophostyles.*
Keel of the corolla short, slightly incurved; flowers yellowish, capitate. 46. *Vigna.*

1. SOPHÒRA L. Sp. Pl. 373. 1753.

Shrubs, perennial herbs, or in tropical regions trees, with odd-pinnate leaves and white yellow or violet flowers in terminal racemes or panicles. Calyx generally campanulate, its teeth short. Standard obovate or orbicular, erect or spreading; wings obliquely oblong; keel oblong, nearly straight. Stamens all distinct or very nearly so; anthers versatile, all alike; style incurved. Ovary short-stalked; ovules ∞. Pod stalked in the calyx, coriaceous or fleshy, terete, constricted between the seeds, mainly indehiscent. [Name Arabic, yellow.]

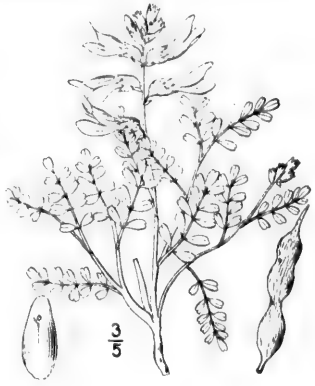
About 25 species, natives of warm and tropical regions of both hemispheres. Besides the following, about 5 others occur in the southern and southwestern States.

1. Sophora sericea Nutt. Silky Sophora. (Fig. 2045.)

Sophora sericea Nutt. Gen. 1: 280. 1818.
Astragalus carnosus Pursh, Fl. Am. Sept. 740. In part. 1814.

Herbaceous, woody at the base, erect or ascending, branched, silky or silvery pubescent with appressed hairs, 6′–12′ high. Stipules subulate, deciduous; leaves short-petioled; leaflets 7–25, short-stalked, obovate or elliptic, obtuse or emarginate at the apex, narrowed or cuneate at the base, 3″–6″ long; raceme peduncled, rather loosely flowered, 2′–4′ long; flowers white, about 8″ long, nearly sessile; pod dry, coriaceous, 1′–2′ long, about 2″ thick, finely pubescent, few-seeded.

Prairies, Nebraska and Colorado to Texas and Arizona. April–June.



2. CLADRÁSTIS Raf. Neogenyton, 1. 1825.

Trees, with odd-pinnate leaves, no stipules nor stipels. Flowers showy, white, in terminal panicles. Calyx-teeth 5, short, broad. Standard orbicular-obovate, reflexed; wings oblong; keel incurved, obtuse, its petals distinct. Stamens 10, all distinct; filaments slender; anthers all alike, versatile. Ovary sessile or nearly so; ovules few; style incurved. Pod linear or lanceolate, short-stalked, flat, at length 2 valved, few-seeded. [Greek, brittle-branch.]

A genus of 2 known species, 1 of the eastern United States, the other of Mantchuria.

1. Cladrastis lùtea (Michx.) Koch. American or Kentucky Yellow-wood. (Fig. 2046.)

Virgilia lutea Michx. f. Arb. Am. 3: 266. *pl.* 3. 1813.
Cladrastis fragrans Raf. Cat. Bot. Gard. Trans. 12. Name only. 1824.
Cladrastis tinctoria Raf. Neogenyton, 1. 1825.
Cladrastis lutea Koch, Dendrol. 1: 6. 1869.

A smooth-barked tree, with maximum height of about 50° and trunk diameter of about 3½°. Foliage nearly glabrous; leaves petioled; leaflets 5–11, ovate, oval or obovate, stalked, 2′–4′ long, pointed or blunt-acuminate at the apex, obtuse or the terminal one cuneate at the base; panicles many-flowered, drooping, 10′–20′ long; pedicels slender, 5″–9″ long; calyx tubular-campanulate; corolla white, about 1′ long; pod short-stalked, glabrous, 2′–4′ long, 4″–5″ wide, 2–6-seeded.

In rich soil, Kentucky, Tennessee and western North Carolina. Wood yellow, hard, strong, yielding a yellow dye; weight per cubic foot 39 lbs. Flowers fragrant. June.

3. THERMÓPSIS R. Br. in Ait. Hort. Kew. Ed. 2, 3: 3. 1811.

Perennial branching herbs, with sheathing scales at the base, alternate 3-foliolate leaves, and large yellow or purple flowers in terminal or axillary racemes. Stipules usually large and foliaceous. Calyx campanulate or short-turbinate, its lobes equal and separate, or the two upper ones united. Standard nearly orbicular, equalling the oblong wings and about equalling the keel. Stamens 10, incurved, separate. Ovary sessile or short-stipitate; ovules ∞; style slightly incurved; stigma terminal, small. Pod sessile or short-stalked, flat (in our species), linear or oblong, straight or curved. [Greek, Lupine-like.]

About 15 species, natives of North America and northern and eastern Asia. Besides the following, 5 others occur in the southern Alleghanies and in the western part of the continent.

Leaflets 1′–2′ long; panicle elongated, usually long-peduncled; eastern. 1. *T. mollis.*
Leaflets ½′–1′ long; panicle short, short-peduncled; western. 2. *T. rhombifolia.*

1. Thermopsis móllis (Michx.) M. A. Curtis. Allegh any Thermopsis. (Fig. 2047.)

Podalyria mollis Michx. Fl. Bor. Am. 1: 264. 1803.
Baptisia mollis DC. Prodr. 2: 100. 1825.
Thermopsis mollis M. A. Curtis; A. Gray, Chlor. Bor. Am. 47. *pl.* 9. 1846.

Erect, somewhat divaricately branched, 2°–3° high, finely appressed-pubescent. Leaves petioled, 3-foliolate; leaflets oval, rhombic-elliptic or obovate, entire, 1′–2′ long, 9″–15″ wide, obtuse or acute, nearly sessile; stipules ovate or lanceolate, shorter than the petiole; racemes 6′–10′ long, mainly terminal; pedicels 2″–6″ long, bracted at the base; flowers yellow, about 9″ long; pod short-stalked in the calyx, linear, slightly curved, about 4′ long.

Southwestern Virginia and North Carolina, in the mountains. July-Aug.

2. Thermopsis rhombifòlia (Nutt.) Richards. Prairie Thermopsis. (Fig. 2048.)

Cytisus rhombifolius Nutt. Fraser's Cat. 1813.

Therm'a rhombifolia Nutt. Gen. 1: 282. 1818.

Thermopsis rhombifolia Richards. Frank. Journ. App. 13. 1823.

Erect, 8′–20′ high, branched, appressed silky-pubescent. Leaves petioled; leaflets oval or obovate or rhombic-elliptic, obtuse, entire, ½′–1′ long, 3″–6″ wide, sessile; stipules broad; racemes terminal or lateral, rather dense, few-flowered, 2′–5′ long; pedicels 2″–4″ long, bracted; flowers yellow, about 10″ long; pod linear, generally strongly recurved-spreading, several-seeded, stalked in the calyx, 3′–4′ long.

In sandy soil, on prairies, Kansas, Nebraska, Dakota and Manitoba, west to the Rocky Mountains. June-July.

4. BAPTÍSIA Vent. Dec. Gen. Nov. 9. 1808.

Perennial erect branching herbs, with sheathing basal scales, alternate 3-foliolate or sometimes simple perfoliate leaves, and showy yellow white or blue flowers in terminal or lateral racemes. Stipules foliaceous, or small, or none. Calyx campanulate, obtuse at base, or sometimes slightly turbinate, the teeth equal and separate, or the two upper ones united. Corolla and stamens as in *Thermopsis*. Ovary stipitate. Pod stalked, ovoid, oblong or nearly globose, pointed, inflated, the valves often coriaceous. [Greek, dyeing.]

About 16 species, natives of eastern and southern North America.

Flowers blue; plant glabrous. 1. *B. australis.*
Flowers yellow.
  Racemes numerous, terminal; plant glabrous. 2. *B. tinctoria.*
  Racemes few, lateral; plant more or less pubescent. 3. *B. villosa.*
Flowers white or cream color.
  Very pubescent. 4. *B. bracteata.*
  Glabrous or nearly so.
    Leaflets oblong or lanceolate, green in drying. 5. *B. alba.*
    Leaflets obovate-cuneate, black in drying. 6. *B. leucantha.*

1. Baptisia austràlis (L.) R. Br. Blue Wild or Blue False Indigo. (Fig. 2049.)

Sophora australis L. Syst. Nat. Ed. 12, 2: 287. 1767.
Baptisia australis R. Br. in Ait. Hort Kew. Ed. 2, 3: 6. 1811.

Glabrous, stout, 4°–6° high. Leaves short-petioled, 3-foliolate; leaflets oblanceolate or sometimes oval, obtuse at the apex, cuneate at the base, entire, 1′–2½′ long, sessile or nearly so; stipules lanceolate, equalling the petioles, or longer, persistent; racemes terminal, erect, loosely flowered, elongated (sometimes 10′ long); bracts narrow, caducous; pedicels 2″–3″ long; flowers indigo-blue, 9″–12″ long; pod oblong, stalked in the calyx, 1′–1½′ long, 5″–6″ thick, tipped with the subulate style.

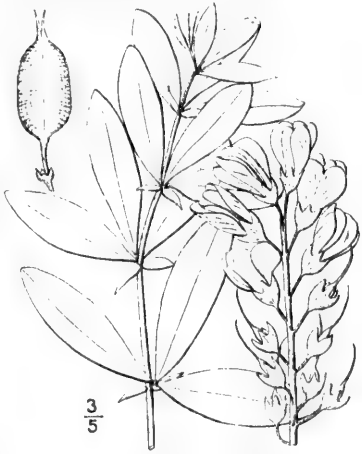
In rich soil, western Pennsylvania to Missouri, south to Georgia and Arkansas. June-Aug.
A hybrid of this species with *B. leucophaea* has been observed by Prof. A. S. Hitchcock in Kansas.

2. Baptisia tinctòria (L.) R. Br. Wild Indigo. Yellow or Indigo Broom. Horsefly-weed. (Fig. 2050.)

Sophora tinctoria L. Sp. Pl. 373. 1753.
Baptisia tinctoria R. Br. in Ait. Hort. Kew. Ed. 2, 3: 6. 1811.

Glabrous, erect, succulent, much branched, 2°–4° high. Leaves petioled, 3-foliolate; leaflets obovate or oblanceolate, ½′–1½′ long, sessile or nearly so, obtuse, cuneate at the base, entire, turning black in drying; stipules minute, caducous; racemes numerous, few-flowered, terminal; bracts minute, deciduous; pedicels 1″–2″ long; flowers bright yellow, about ½′ long; pods ovoid or nearly globose, 3″–5″ long, tipped with the subulate style.

In dry soil, Maine to southern Ontario, Minnesota, Florida and Louisiana. June–Sept.



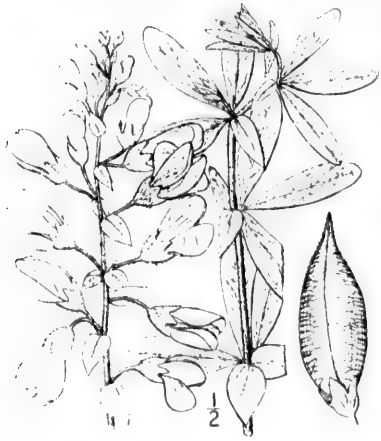
3. Baptisia villòsa (Walt.) Nutt. Hairy Wild Indigo. (Fig. 2051.)

Sophora villosa Walt. Fl. Car. 134. 1788.
Baptisia villosa Nutt. Gen. 1: 281. 1818.

Erect, branched, 2°–4° high, more or less pubescent throughout, especially when young. Leaves very short-petioled or sessile, 3-foliolate, turning dark in drying; leaflets oblong, oval, or obovate, obtusish at the apex, narrowed or cuneate at the base, 2′–4′ long, entire; stipules lanceolate or subulate, much longer than the petioles, persistent or the upper deciduous; racemes lateral, sometimes 10′ long, loosely many-flowered; pedicels 3″–4″ long; flowers yellow, about 1′ long; bracts caducous or deciduous; pods oblong-ovoid, about 1¼′ long, finely appressed-pubescent, tipped with the subulate style.

In dry soil, Virginia and North Carolina, west to Arkansas. June–July.

4. Baptisia bracteàta Ell. Large-bracted Wild Indigo. (Fig. 2052.)

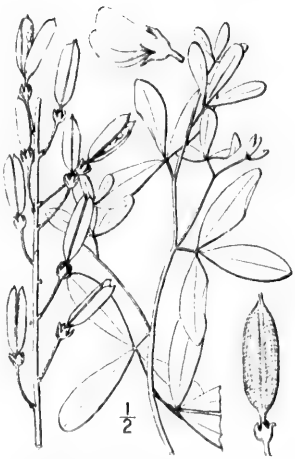


Podalyria bracteata Muhl. Cat. 42. Without description. 1813.
Baptisia bracteata Ell. Bot. S. C. & Ga. 1: 469. 1817.
Baptisia leucophaea Nutt. Gen. 1: 382. 1818.

Erect or ascending, bushy-branched, villous-pubescent throughout. Leaves sessile or short-petioled, 3-foliolate, dark green or brownish in drying; leaflets oblanceolate or spatulate, narrowed or cuneate at the base, obtuse or acutish at the apex, 1½′–3′ long, 4″–8″ wide, thick, reticulate-veined; stipules lanceolate, or ovate, persistent; racemes usually few, mainly lateral, sometimes 1° long, reclining, many-flowered; flowers white or cream-color, about 1′ long, very showy; pedicels slender, 6″–15″ long, spreading, somewhat secund; bracts large and persistent; pods ovoid, mostly narrowed at the base, 1′–2′ long, pubescent, tipped with a long at length deciduous style.

Prairies, Illinois, Michigan and Minnesota, south to Louisiana and Texas. April–May.

5. Baptisia álba (L.) R. Br. White Wild Indigo. (Fig. 2053.)



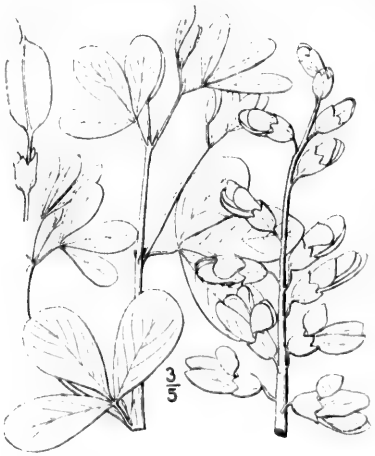
Crotalaria alba L. Sp. Pl. 716. 1753.

Baptisia alba R. Br. in Ait. Hort. Kew. Ed. 2, 3: 6. 1811.

Glabrous throughout, divergently branching, 1°–3° high. Leaves petioled, 3-foliolate; petioles slender, 3″–9″ long; leaflets oblong or oblanceolate, narrowed at the base, obtuse at the apex, 1′–1½′ long, 4″–6″ wide, rather thin, green in drying; stipules and bracts minute, subulate, early deciduous; racemes elongated, erect, 6′–10′ long, lateral, long-peduncled; pedicels 3″–8″ long; flowers white, 6″–7″ long; pod linear-oblong, about 1½′ long, 4″ thick, abruptly tipped with an almost filiform deciduous style.

In dry soil, Missouri to southern Indiana, south to Louisiana, east to North Carolina and Florida. May–June.

6. Baptisia leucántha T. & G. Large White Wild Indigo. (Fig. 2054.)



Baptisia leucantha T. & G. Fl. N. A. 1: 385. 1840.

Glabrous throughout, succulent, branching, 2°–4° high, the branches stout, ascending. Leaves petioled, 3-foliolate, blackening in drying; leaflets obovate or oblanceolate, 1′–2′ long, 6″–12″ wide, very obtuse, rounded and sometimes slightly emarginate at the apex, narrowed or cuneate at the base; stipules lanceolate or linear, equalling or shorter than the petioles, deciduous; racemes lateral, sometimes 1° long, loosely flowered; flowers white, 9″–10″ long; pedicels 2″–3″ long; pod ellipsoid, long-stalked in the calyx, about 9″ long, tipped with the subulate style.

In rich soil, Lake Erie to Minnesota, south to Kentucky, North Carolina, Florida and Texas. June–July.

5. CROTALÀRIA L. Sp. Pl. 714. 1753.

Herbs, sometimes slightly woody, with simple (or in some tropical species 3–7-foliolate) leaves, and racemose flowers. Calyx 5-toothed, slightly 2-lipped. Standard orbicular or ovate, often cordate; wings oblong or obovate; keel curved. Stamens monadelphous, their sheath deeply cleft; anthers of 2 forms, alternating with each other, the one small, versatile, the other larger. Ovary sessile or short-stalked; style more or less curved. Pod oblong or globose, inflated, coriaceous or membranous, many-seeded, the seeds loose at maturity. [Greek, a rattle.]

About 250 species, mainly natives of tropical regions. Besides the following some 7 others occur in the southern and southwestern United States.

Stem and branches erect or ascending; leaves, at least the upper, lanceolate or oblong. 1. *C. sagittalis.*

Stems prostrate, from a deep root; leaves broadly oval. 2. *C. rotundifolia.*

1. Crotalaria sagittàlis L. Rattle-box. (Fig. 2055.)

Crotalaria sagittalis L. Sp. Pl. 714. 1753.

Annual, or perennial (?), erect or decumbent, villous-pubescent, branching, rarely over 1° high. Leaves simple, oval, lanceolate or oblong, acute or obtusish at the apex, rounded at the base, entire, nearly sessile, 1′–2½′ long, 2″–8″ wide; stipules persistent and united, decurrent on the stem, sagittate above, or the lower wanting; peduncles 1′–4′ long, 2–4-flowered; pedicels 1″–3″ long; flowers yellow, 4″–6″ long, the corolla about equalling the calyx; pod oblong, glabrous, nearly sessile in the calyx, 1′ long, 4″–5″ in thickness, much inflated, nearly black at maturity; seeds shining.

In dry, open places, northern New England to Florida, west to Minnesota, Arkansas and Mexico. June–Sept.

2. Crotalaria rotundifòlia (Walt.) Poir. Prostrate Rattle-box. (Fig. 2056.)

Anonymos rotundifolia Walt. Fl. Car. 181. 1788.

Crotalaria sagittalis var. *ovalis* Michx. Fl. Bor. Am. 2: 55. 1803.

Crotalaria rotundifolia Poir. in Lam. Encycl. Suppl. 2: 402. 1811.

Crotalaria ovalis Pursh, Fl. Am. Sept. 469. 1814.

Perennial by a deep somewhat woody root, the slender branches usually prostrate. Pubescence mostly dense, brownish, appressed; leaves broadly oblong or oval, obtuse at both ends, or narrowed at the base, paler beneath than above, ½′–1½′ long; petioles 1″–2″ long; upper stipules usually distinctly sagittate, the lower much smaller, or often wanting; peduncles lateral, 2′–6′ long, slender, 2–6-flowered; flowers usually distant, yellow, 6″–8″ long; corolla little longer than the calyx; pod nearly as in the preceding species.

Mostly in dry soil, southern Virginia to Florida and Mississippi. May–Aug.

6. LUPÌNUS L. Sp. Pl. 721. 1753.

Herbs, rarely shrubs, with alternate digitately-compound 7–15-foliolate (rarely simple or 3–5-foliolate) leaves, and showy flowers in terminal spikes or racemes. Calyx deeply toothed and 2-lipped. Standard orbicular or ovate, its margins reflexed; wings oblong or obovate; keel incurved, sometimes beaked. Stamens monadelphous, their sheath not cleft; anthers of two forms as in *Crotalaria*. Ovary sessile; style incurved. Pod flattened, generally constricted between the seeds, the valves coriaceous. [Latin name of some pulse, from *lupus*, wolf.]

Over 100 species, mainly natives of temperate and warm regions. About 70 occur in North America, mainly on the western side of the continent.

Perennial; flowers 7″–9″ long; leaflets oblanceolate.	
Corolla blue, pink or white, the standard not spotted.	1. *L. perennis.*
Corolla blue, with a conspicuous dark spot on the standard.	2. *L. Plattensis.*
Perennial; flowers 4″–6″ long; leaflets oblong-linear.	3. *L. argenteus.*
Annual; leaflets mainly oblong; pod 2-seeded.	4. *L. pusillus.*

1. Lupinus perénnis L. Wild Lupine. (Fig. 2057.)

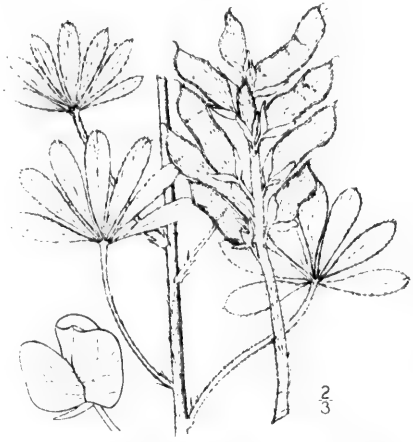
Lupinus perennis L. Sp. Pl. 721. 1753.

Perennial, erect, more or less pubescent, branched, 1°–2° high. Leaves slender-petioled, 2′–3′ broad, leaflets 7–11 (commonly about 8), oblanceolate, sessile or nearly so, obtuse and mucronate at the apex, 1′–1½′ long, 3″–6″ wide, appressed-pubescent or glabrate; raceme terminal, peduncled, 6′–10′ long, rather loosely flowered; pedicels 3″–6″ long; flowers blue, sometimes pink, or white, 6″–8″ long; pod linear-oblong, very pubescent, 1½′ long, 4″ wide, usually 4–5-seeded, the valves coiling at dehiscence; style subulate.

In dry, sandy soil, Maine and Ontario to Minnesota, Florida, Missouri and Louisiana. Called also Old Maid's Bonnets and Wild Pea. May–June.

Lupinus perénnis occidentàlis S. Wats. Proc. Am. Acad. 8: 530. 1873.

Villous-pubescent all over. Michigan and Wisconsin.



3. Lupinus argénteus Pursh. Silvery Lupine. (Fig. 2059.)

Lupinus argenteus Pursh, Fl. Am. Sept. 468. 1814.
Lupinus decumbens Torr. Ann. Lyc. N. Y. 2: 191. 1826.

Perennial, rather shrubby, bushy-branched, 1°–2° high, finely and densely silky-pubescent with appressed hairs. Petioles slender, equalling or the lower exceeding the leaves; stipules minute, subulate; leaflets sessile, linear-oblong, acute or obtusish at the apex, narrowed at the base, 9″–18″ long, 2″–3″ wide; racemes terminal, rather dense, 2′–5′ long; pedicels 2″–3″ long; flowers purple, 4″–5″ long; pod silky-pubescent, about 1′ long, mostly 3–5-seeded.

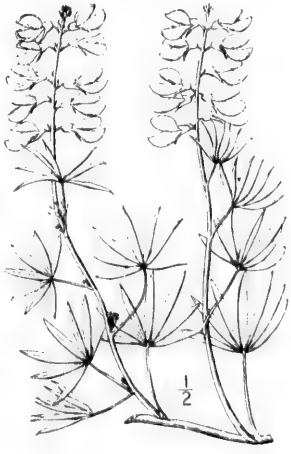
Prairies, western Nebraska and South Dakota to Montana, south to New Mexico and Arizona. The so-called var. *argophyllus* is a still more silky form, with larger flowers. July–Aug.

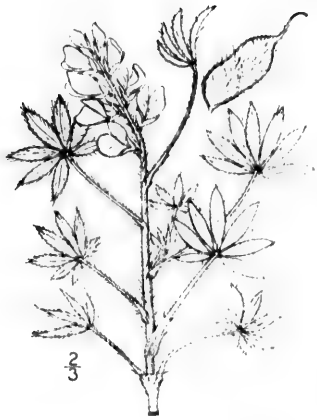
2. Lupinus Platténsis S. Wats. Nebraska Lupine. (Fig. 2058.)

Lupinus ornatus var. *glabratus* S. Wats. Proc. Am. Acad. 8: 528. 1873. Not *L. glabratus* Agardh. 1835.
Lupinus Plattensis S. Wats. Proc. Am. Acad. 17: 369. 1882.

Resembling the preceding species, perennial, 1°–1½° high, branching, villous or appressed-pubescent, the living plant with a glaucous appearance; leaflets 7–10, oblanceolate, spatulate or narrowly oval, 1′–1½′ long, 3″–5″ wide; raceme terminal, 4′–8′ long, loosely flowered; pedicels 3″–5″ long; corolla blue, 6″–8″ long, the standard with a conspicuous dark spot.

Plains, Nebraska, Wyoming, Dakota. June–July.





4. Lupinus pusillus Pursh. Low Lupine.
(Fig. 2060.)

Lupinus pusillus Pursh, Fl. Am. Sept. 468. 1814.

Annual (always?), villous-pubescent, 4′–8′ high, from a deep root, much branched near the base. Leaves petioled, 1′–2′ wide; leaflets 5–7 (commonly 5), oblong or oblanceolate, narrowed at the base, obtuse or acute at the apex, glabrous or nearly so on the upper surface, pubescent with long scattered hairs beneath, 3″–4″ wide; racemes numerous, short-peduncled or sessile, 1′–3′ long, densely few-flowered; pedicels 1″–2″ long; flowers blue, 3″–4″ long; pod oblong, very pubescent, 6″–8″ long, 2″–3″ broad, about 2-seeded; style subulate.

Dry plains, Kansas, Dakota, west to the Sierra Nevada, south to Arizona and New Mexico. March-July.

7. ÙLEX L. Sp. Pl. 741. 1753.

Shrubs, with stiff spine-like branches, simple, linear stiff very prickly leaves, and large yellow solitary or racemed flowers. Calyx membranous, mostly yellow, divided nearly to its base into 2 concave lips; upper lip mostly 2-toothed, and lower 3-toothed; teeth short. Standard ovate; wings and keel oblong, obtuse. Stamens monadelphous; anthers alternately longer and shorter, the shorter versatile. Ovary sessile, several-many-ovuled; style somewhat incurved, smooth. Pod ovoid, oblong or linear. Seeds strophiolate. [The ancient Latin name.]

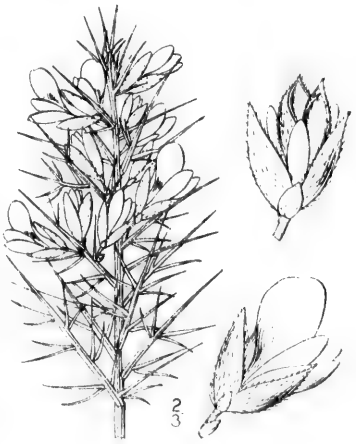
About 20 species, natives of eastern Europe.

1. Ulex Europaèus L. Furze. Gorse. Whin. Prickly or Thorn Broom.
(Fig. 2061.)

Ulex Europaeus L. Sp. Pl. 741. 1753.

Much branched, bushy, 2°–6° high, more or less pubescent. Branchlets very leafy, tipped with spines; leaves prickly, 2″–7″ long, or the lowest sometimes lanceolate and foliaceous; flowers borne on twigs of the preceding season, solitary in the axils, 6″–8″ long, the twigs appearing like racemes; pedicels very short, bracted at the base; calyx a little shorter than the petals, minutely 2-bracteolate; pod few-seeded, compressed, scarcely longer than the calyx.

In waste places, southern New York and eastern Virginia, escaped from cultivation. Also on Vancouver Island. Fugitive from Europe. May-July.



8. GENÍSTA L. Sp. Pl. 709. 1753.

Low branching sometimes thorny shrubs, mainly with 1-foliolate leaves, and showy clustered yellow flowers. Calyx 2-lipped; teeth long. Standard oval or ovate; wings oblong; keel oblong, deflexed, the claws of its petals adnate to the uncleft sheath of the monadelphous stamens; anthers alternately long and short. Ovary sessile, several-ovuled; style incurved at the apex. Pod various, flat in our species, several-seeded. Seeds not strophiolate. [Celtic, gen, a small bush.]

About 80 species, natives of Europe, northern Africa and western Asia.

1. Genista tinctòria L. Dyeweed or Greenweed. Woad-waxen. Base Broom. (Fig. 2062.)

Genista tinctoria L. Sp. Pl. 710. 1753.

Branching from the base, not thorny, the sterile shoots decumbent, the flowering ones erect, stiff, 1°–2° high, branched above, slightly pubescent. Leaves 1-foliolate, sessile, lanceolate or elliptic-lanceolate, ½′–1½′ long, glabrous or with scattered hairs, acute at the apex, narrowed at the base, entire, shining; stipules none; racemes numerous, terminal, 1′–2′ long, few-flowered; bracts ovate-lanceolate, acute; flowers yellow, nearly sessile, about 6″ long; calyx bracteolate at the base, its 3 lower teeth narrower than the 2 upper; pod about 1′ long, flat, glabrous.

On dry hills, Maine, Massachusetts and eastern New York. Naturalized from Europe. Native also of northern Asia. Summer. Known also as Green-Wood, Dyer's-broom, Dyer's-greenweed, Dyer's-whin and Alleluia.

9. CÝTISUS L. Sp. Pl. 739. 1753.

Shrubs, often stiff or spiny, with 3-foliolate or 1-foliolate leaves, and showy clustered flowers, mainly in terminal racemes. Calyx 2-lipped, the teeth short; standard ovate or orbicular; wings oblong or obovate; keel straight or curved. Stamens monadelphous; anthers alternately larger and smaller. Ovary sessile, many-ovuled; style incurved. Pod flat, oblong or linear, pubescent or glabrous, several-seeded; seeds strophiolate. [From Cythrus, one of the Cyclades, where the first species was found.]

About 45 species, natives of Europe, western Asia and northern Africa, the flowers very slightly different from those of *Genista*.

1. Cytisus scopàrius (L.) Link. Broom. Green or Scotch Broom. Hagweed. (Fig. 2063.)

Spartium scoparium L. Sp. Pl. 709. 1753

Cytisus scoparius Link, Enum. Hort. Berol. 2: 241. 1822.

Sarothamnus scoparius Wimm.; Koch, Syn. Fl. Germ. 152. 1837.

Stiff, wiry, 3°–5° high, much branched, nearly glabrous. Branches elongated, straight, nearly erect, angled; lower leaves petioled, 3-foliolate, the leaflets obovate, acute, or mucronate-tipped, 3″–5″ long, entire, narrowed at the base; upper leaves sessile, often 1-foliolate; stipules none; flowers bright yellow, nearly 1′ long, in elongated terminal leafy racemes; pedicels solitary or 2–3 together, 3″–5″ long; pod flat, glabrous on the sides, but ciliate on the margins, 1′–2′ long; style slender, at length spirally curved.

In waste places, Massachusetts to Delaware and Virginia. Also at Shelburne, Nova Scotia, and on Vancouver Island. Adventive or naturalized from Europe. Bannal, Besom. Summer.

10. MEDICÀGO L. Sp. Pl. 778. 1753.

Herbs (a single shrubby species in southern Europe), with small 3-foliolate leaves, and small yellow or violet flowers in axillary heads or racemes. Leaflets commonly dentate, pinnately veined, the veins terminating in the teeth. Calyx-teeth short, nearly equal; standard obovate or oblong; wings oblong; keel obtuse. Stamens diadelphous, the 1 opposite the standard separate from the other 9; anthers all alike. Ovary sessile or nearly so, 1–several-ovuled; style subulate. Pod curved or spirally twisted, reticulated or spiny, indehiscent, 1–few-seeded. [Greek, Medike, from Medea, whence the Medic, or Lucerne was derived.]

About 50 species, natives of Europe, Asia and Africa.

Perennial; flowers violet, conspicuous; 1. *M. sativa.*
Annual; flowers bright yellow, small.
  Pod 1-seeded, curved, not spiny. 2. *M. lupulina.*
  Pod several-seeded, spiny on the edges, spirally twisted.
    Pod loosely coiled, not furrowed on the edge. 3. *M. denticulata.*
    Pod densely coiled, its edge furrowed. 4. *M. Arabica.*

1. Medicago sativa L. Purple Medic. Alfalfa. Lucerne. Burgundy, Chilian or Brazilian Clover. Snail Clover. (Fig. 2064.)

Medicago sativa L. Sp. Pl. 778. 1753.

Perennial, much branched, decumbent or ascending, 1°–1½° high, the young shoots and leaves with some scattered hairs, glabrous when mature. Leaves petioled; leaflets oblanceolate or obovate, 2″–12″ long, dentate, especially toward the apex, obtuse, truncate or emarginate and often mucronate, narrowed or cuneate at the base; stipules entire; peduncles ½′–2′ long, bearing a dense short raceme of violet or blue flowers; petals about 3″ long; pod pubescent, twisted into 2 or 3 spires.

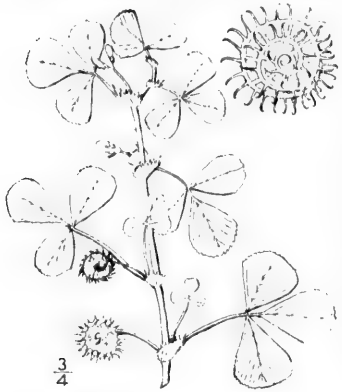
In fields and waste places, New England and Ontario to Minnesota, south to Virginia and Missouri. Much cultivated for fodder in the southern and western States. Introduced from Europe. Great or Spanish Trefoil. Summer.

2. Medicago lupulina L. Black or Hop Medic. Blackseed Hop Clover. Nonesuch. (Fig. 2065.)

Medicago lupulina L. Sp. Pl. 779. 1753.

Annual, pubescent, branched at the base, the branches decumbent and spreading, often 1°–2° long; leaves petioled; leaflets obovate, oval or nearly orbicular, variable in size, sometimes 6″–8″ long, denticulate or crenulate, obtuse, mucronate or emarginate, narrowed or rounded at the base; stipules ovate or lanceolate, dentate; peduncles 1′–3′ long; head oblong or cylindric, dense, 2″–10″ long; flowers bright yellow, about 1″ long; pods nearly glabrous, black when ripe, curved into a partial spire, strongly veined, 1-seeded.

In fields and waste places, common throughout our area, and widely distributed as a weed in all temperate regions. Native of Europe and Asia. Called also Black or Melilot Trefoil, Black-grass, and sometimes Shamrock. March–Dec.



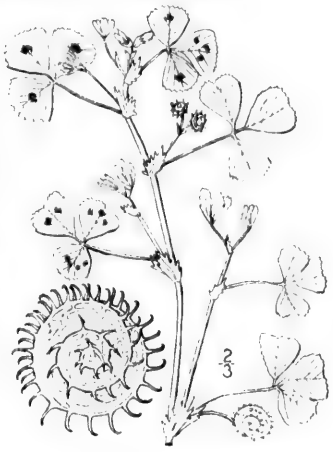
3. Medicago denticulàta Willd. Toothed Medic. (Fig. 2066.)

Medicago denticulata Willd. Sp. Pl. 3: 1414. 1803.

Annual, branched at the base, the branches spreading or ascending, glabrous or with a few appressed hairs. Leaves petioled; leaflets obovate, rounded, emarginate or obcordate, cuneate, crenulate, 5″–8″ long; stipules dentate; flowers few, yellow, 1″ long, in small, peduncled heads; pod several seeded, spirally twisted, the 2 or 3 coils flat and rather loose, elegantly reticulated with elevated veins, the edges armed with 1 or 2 rows of curved prickles and not furrowed between them.

In waste places and in ballast about the seaports, Nova Scotia to Pennsylvania; also in the southern and western States and on the Pacific Coast. Fugitive or adventive from Europe. Native also of Asia and widely distributed as a weed. Summer.

4. **Medicago Arábica** All. Spotted Medic. (Fig. 2067.)



Medicago Arabica All. Fl. Ped. 1: 315. 1785.

Medicago maculata Sibth. Fl. Oxon. 232. 1794.

Annual, glabrous, or sometimes with a few spreading hairs, closely resembling the preceding species, but generally stouter. Leaflets often nearly 1′ long, and with a conspicuous dark spot or spots near the centre; pod nearly globose, of 3 or 4 compactly wound coils, reticulate-veined on the sides, the edge thicker and furrowed between the marginal rows of curved prickles.

In waste places and ballast, New Brunswick to Pennsylvania. Also on the Pacific Coast. Fugitive or adventive from Europe. Summer. Called also Bur-, Heart- or Spotted-clover, Heart-trefoil, and Heart-leaf.

11. **MELILÒTUS** Juss. Gen. Pl. 356. 1789.

Annual or biennial herbs, with 3-foliolate petioled leaves, dentate leaflets, their veins commonly ending in the teeth, and small white or yellow flowers in slender racemes. Calyx-teeth short, nearly equal; standard obovate or oblong; wings oblong; keel obtuse. Stamens diadelphous; anthers all alike. Ovary sessile or stipitate, few-ovuled; style filiform. Pod ovoid or globose, straight, indehiscent or finally 2-valved. Seeds solitary or few. [Greek, Honey-lotus.]

About 20 species, natives of Europe, Africa and Asia.

Flowers white; standard a little longer than the wings. 1. *M. alba.*
Flowers yellow; standard about equalling the wings. 2. *M. officinalis.*

1. **Melilotus álba** Desv. White Melilot. White Sweet-clover. (Fig. 2068.)

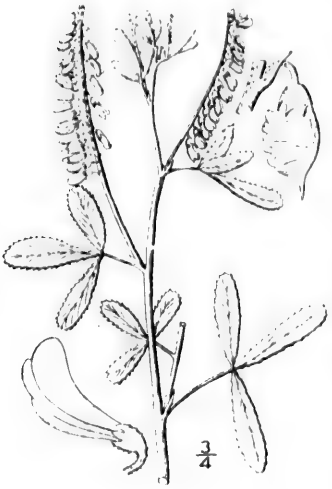
Melilotus alba Desv. in Lam. Encycl. 4: 63. 1797.

Melilotus vulgaris Willd. Enum. Hort. Berol. 790. 1809.

Erect or ascending, 3°–10° high, branching, glabrous, or the young twigs and leaves finely pubescent. Leaves petioled, rather distant; leaflets oblong or slightly oblanceolate, serrate, narrowed at the base, truncate, emarginate or rounded at the apex, 6″–10″ long, 2″–5″ wide; stipules subulate; racemes numerous, slender, 2′–4′ long, often 1-sided; pedicels 1″ long or less; flowers white; standard slightly longer than the wings; pod ovoid, slightly reticulated, glabrous, 1½″ long.

In waste places, frequent throughout our area and in the southern States. Adventive or naturalized from Europe, and native also of Asia. Called also Honey-lotus, Cabul-, Tree- or Bokhara-clover. Leaves fragrant in drying, as in other species of the genus. June–Nov.

2. Melilotus officinàlis (L.) Lam. Yellow Melilot. Yellow Sweet-clover. (Fig. 2069.)



Trifolium Melilotus officinalis L. Sp. Pl. 765. 1753.

Melilotus officinalis Lam. Fl. Fr. 2: 594. 1778.

Resembling the preceding species, but the flowers are yellow. Standard about equalling the wings and keel; leaflets oblong, oblanceolate, or oval, serrate, the apex rounded, not truncate; pod about 2″ long, with irregularly reticulated veins, often slightly pubescent with appressed hairs.

In waste places, frequent throughout our area and in the southern States. Adventive or naturalized from Europe. Native also of Asia. Summer, blooming later than *M. alba*, where the two grow together in southern New York. Old English names, Balsam-flowers, Hart's-clover, King's-clover, King's Crown, Heartwort.

Melilotus Indica (L.) All., introduced on ballast about the seaports, and an exceedingly abundant weed in the Far West, may be readily distinguished from this by its much smaller yellow flowers.

Ononis rèpens L., an herb of the tribe TRIFOLIEAE, with axillary flowers, forming terminal leafy racemes, has been found as a waif in central New York. The genus is distinguished from others of the tribe by its monadelphous stamens.

12. TRIFÒLIUM L. Sp. Pl. 764. 1753.

Herbs, with (in our species) mostly 3-foliolate, denticulate leaves, and purple pink red white or yellow flowers in dense heads or spikes. Stipules adnate to the petiole. Calyx-teeth nearly equal. Petals commonly persistent, their claws more or less completely adnate to the stamen-tube. Stamens diadelphous, or the tenth one separate for only a portion of its length. Ovary sessile or stipitate, few-ovuled. Pod oblong or terete, often included in the calyx, membranous, indehiscent or tardily dehiscent by 1 suture, 1–6-seeded. [Latin, referring to the 3 leaflets.]

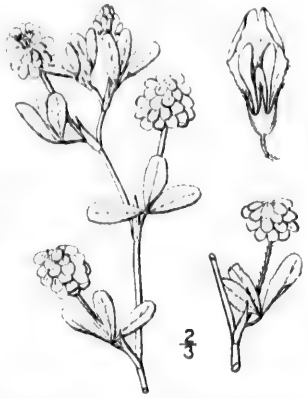
About 250 species, most abundant in the north temperate zone, a few in South America and South Africa. Besides the following, about 50 others occur in the western part of the continent.

Flowers yellow.
- Head 6″–9″ long; stipules linear; leaflets all sessile. — 1. *T. agrarium.*
- Head 4″–6″ long, nearly globose; stipules ovate; terminal leaflet stalked.
  - Head 20–40-flowered; standard conspicuously striate. — 2. *T. procumbens.*
  - Head 10–12-flowered; standard scarcely striate. — 3. *T. dubium.*

Flowers red, purple, pink, or white.
- Head or spike much longer than thick; calyx silky, its teeth plumose.
  - Corolla crimson, equalling or exceeding the calyx-lobes. — 4. *T. incarnatum.*
  - Corolla whitish, shorter than the calyx-lobes. — 5. *T. arvense.*
- Head globose, oval or ovoid; calyx nearly glabrous.
  - Flowers sessile, or very nearly so; heads dense, ovoid, oval or globose.
    - Heads sessile, or nearly so. — 6. *T. pratense.*
    - Heads always distinctly peduncled.
      - Calyx-teeth pubescent. — 7. *T. medium.*
      - Plant glabrous throughout. — 8. *T. Beckwithii.*
  - Flowers pedicelled; heads umbel-like, globose.
    - Heads 1′ in diameter or more; peduncles 1′–3′ long.
      - Prostrate; pubescent; perennial. — 9. *T. Virginicum.*
      - Ascending; pubescent; annual or biennial. — 10. *T. reflexum.*
      - Stoloniferous; glabrous; perennial. — 11. *T. stoloniferum.*
    - Heads 6″–9″ in diameter; lower peduncles 2′–8′ long.
      - Ascending or procumbent; flowers pink, pinkish, or purple.
        - Ascending; calyx much shorter than the pink or nearly white corolla. — 12. *T. hybridum.*
        - Procumbent; tufted; calyx nearly equalling the purple corolla. — 13. *T. Carolinianum.*
      - Creeping; flowers white or pinkish. — 14. *T. repens.*

1. Trifolium agràrium L. Yellow or Hop-clover. (Fig. 2070.)

Trifolium agrarium L. Sp. Pl. 772. 1753.



Glabrous or slightly pubescent, annual, ascending, branched, 6′–18′ high. Leaves petioled; stipules linear-lanceolate, acuminate, 4″–7″ long, adnate to the petiole for about one-half its length; leaflets all from the same point, sessile, obovate or oblong, finely denticulate, narrowed at the base, rounded, truncate or emarginate at the apex, 6″–9″ long; peduncles axillary, ½′–2′ long; head oblong, or oval, 6″–9″ long, densely many-flowered; flowers yellow, 2″–3″ long, at length reflexed; pedicels shorter than the calyx; standard slightly emarginate, exceeding the pod, conspicuously striate, and brown, especially when dry.

Along roadsides and in waste places, Nova Scotia to Virginia, west to Ontario, western New York and Iowa. Naturalized from Europe. May–Sept.

2. Trifolium procúmbens L. Low, or Smaller Hop-clover or Hop-trefoil. (Fig. 2071.)

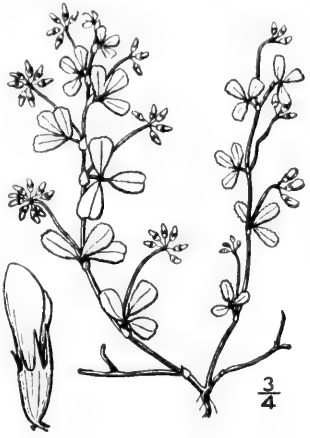
Trifolium procumbens L. Sp. Pl. 772. 1753.

Similar to the preceding species, but lower, more spreading and more pubescent. Leaflets obovate, cuneate at the base, rounded, truncate or emarginate at the apex, finely denticulate, 4″–7″ long, the lateral ones nearly sessile, the terminal distinctly stalked; stipules ovate, adnate to the lower part of the petiole, about 2″ long; peduncles 3″–12″ long; heads 20–40-flowered, globose or short-oval, 4″–6″ in greatest diameter; flowers yellow, at length reflexed, about 2″ long; standard dilated, not folded, exceeding the pod, striate and brown when dry.

In fields and along roadsides, frequent or occasional throughout our area and in the southern States. Naturalized from Europe. May–Sept.

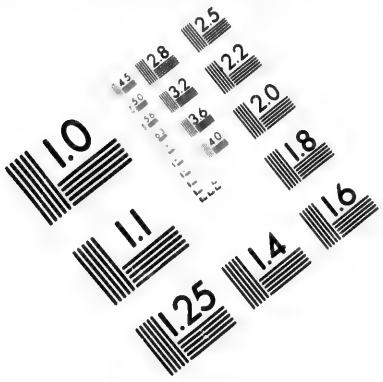
3. Trifolium dùbium Sibth. Least Hop-clover or Hop-trefoil. (Fig. 2072.)

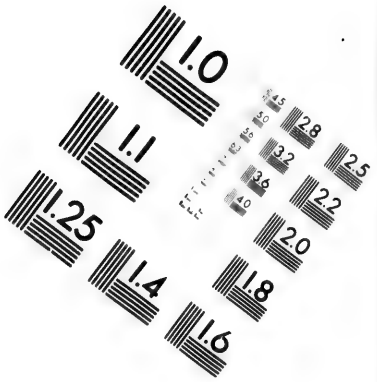
Trifolium dubium Sibth. Fl. Oxon. 231. 1794.
Trifolium minus Smith, Engl. Bot. *pl. 1256.* 1799.
Trifolium procumbens var. *minus* Koch, Fl. Germ. & Helv. Ed. 2, 195. 1843.



Straggling or ascending, nearly glabrous, stems 2′–20′ long, branching. Leaflets obovate, truncate or emarginate at the apex, or even obcordate, denticulate, cuneate at the base, the lateral ones nearly sessile, the terminal stalked; stipules ovate or lanceolate, adnate to the lower part of the petiole; peduncles 3″–12″ long; heads nearly globose, 2″–3″ in diameter, 3–20-flowered; flowers about 1½″ long, turning brown, at length reflexed; standard exceeding and folded over the pod, scarcely striate.

In fields and waste places, New England, New Jersey and in the southern States. Also in British Columbia. Naturalized from Europe. Summer. Said to be the true Shamrock. Called also Yellow Suckling, Wild Trefoil.





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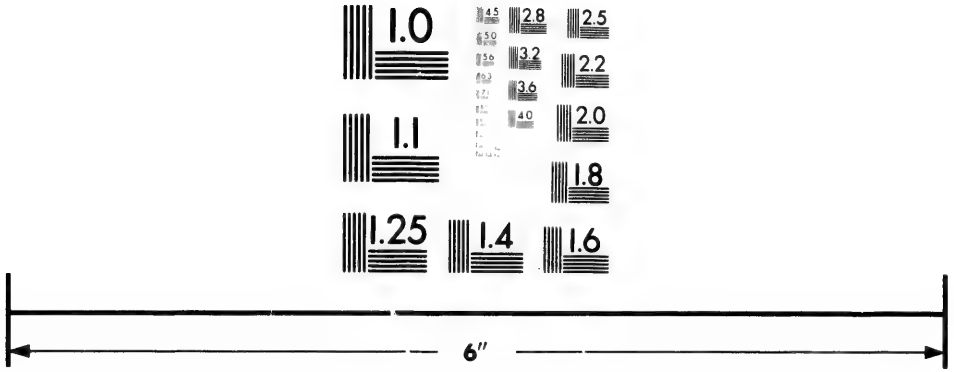

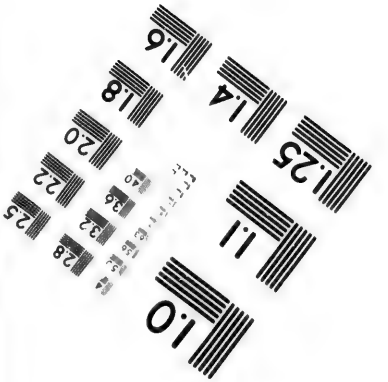

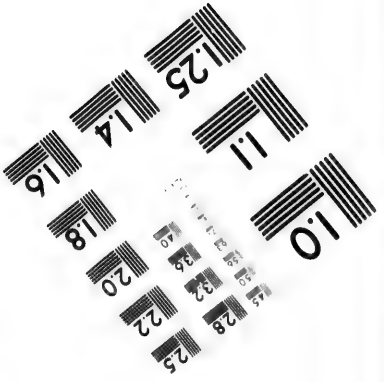

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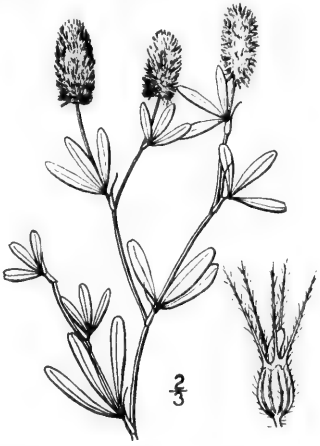
4. Trifolium incarnàtum L. Crimson, Carnation or Italian Clover. (Fig. 2073.)

Trifolium incarnatum L. Sp. Pl. 769. 1753.

Annual, erect, softly pubescent, little branched, 6′–3° high. Leaves long-petioled; stipules broad, membranous, dentate, 4″–12″ wide; leaflets all from the same point, very nearly sessile, obovate or obcordate, narrowed or cuneate at the base, denticulate, 6″–12″ long; heads terminal, oblong or ovoid, 1′–2½′ long; flowers sessile, 4″–6″ long; calyx hairy; corolla crimson, equalling or exceeding the subulate plumose calyx-lobes.

In fields, waste places and ballast, southern New York, New Jersey and Pennsylvania. Occasionally cultivated for fodder. Introduced from Europe. Called also Napoleons. Summer.

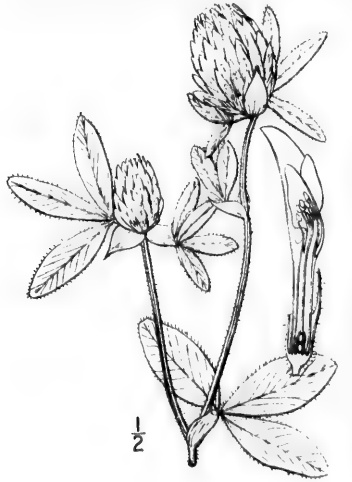


5. Trifolium arvénse L. Rabbit-foot, Old-field or Stone Clover. (Fig. 2074.)

Trifolium arvense L. Sp. Pl. 769. 1753.

Annual, erect, freely branching, silky-pubescent, 6′–18′ high. Leaves short-petioled; stipules narrow, 3″–5″ long, subulate-tipped, entire or nearly so; leaflets all from the same point, linear or oblanceolate, denticulate above, obtuse and often emarginate, narrowed or cuneate at the base, 6″–12″ long; heads terminal, peduncled, oblong or cylindric, 6″–12″ long, very dense; calyx very silky; corolla whitish, shorter than the subulate plumose calyx-lobes.

In fields and waste places, common in most sections throughout our area and in the southern States. Naturalized from Europe. Native also of northern Asia. Called also Hare's-foot and Pussy Clover. May–Sept.



6. Trifolium praténse L. Red, Purple or Meadow Clover. (Fig. 2075.)

Trifolium pratense L. Sp. Pl. 768. 1753.

Perennial, more or less pubescent, branching, decumbent or erect, 6′–2° high. Leaves long-petioled; stipules ovate, strongly veined, subulate-tipped, 6″–10″ long; leaflets short-stalked, all from the same point, oval, oblong, or obovate, narrowed at base, hardly cuneate, obtuse and sometimes emarginate at the apex, often dark-spotted near the middle, finely denticulate, ¼′–2′ long; heads globose or somewhat ovoid, sessile (rarely slightly peduncled), about 1′ long; flowers red (rarely white), sessile, about 6″ long, remaining erect in fruit; calyx sparingly hairy, its subulate teeth shorter than the corolla.

In fields and meadows, common throughout our area and in the southern States. Naturalized from Europe and widely cultivated for fodder. Native also of northern Asia. Leaflets commonly 3, sometimes 4–11. English names, Honeysuckle Clover, Knap, Suckles. April–Nov.

7. Trifolium mèdium L. Zig-zag Clover. Cow- or Marl-grass. (Fig. 2076.)

T. medium L. Amoen. Acad. 4: 105. 1759.

Closely resembling the preceding species. Stem sometimes conspicuously zigzag, but often straight, finely pubescent or glabrate. Stipules lanceolate; leaflets lanceolate or oblong, not spotted, frequently entire except for the projecting tips of the veins; heads always more or less peduncled; corolla 6″–7″ long, bright purple; calyx-tube nearly glabrous, the teeth slightly pubescent.

In fields and waste places, Nova Scotia and Quebec to New York, west to Missouri. Also on Vancouver Island. Adventive or naturalized from Europe. Native also of Siberia. Summer.

8. Trifolium Beckwíthii Brewer. Beckwith's Clover. (Fig. 2077.)

Trifolium Beckwithii Brewer; S. Wats. Proc. Am. Acad. 11: 128. 1876.

Perennial, glabrous throughout; stems rather stout, erect or nearly so, straight, 6′–18′ high. Basal leaves on long petioles; stipules narrow, acute, 1′ long or less; leaflets oblong, or somewhat oblanceolate, obtuse, denticulate, 9″–2′ long; heads long-peduncled, globose, 1′–1½′ thick; flowers purple or purplish, 6″–9″ long, very short-pedicelled, the lower at length reflexed; calyx-teeth glabrous, linear-subulate, the longer nearly equalling the tube; pod 2–6-seeded.

Eastern South Dakota, probably introduced from farther west. Native from Montana to California. May–June.

9. Trifolium Virgínicum Small. Prostrate Mountain Clover. (Fig. 2078.)

Trifolium Virginicum Small, Mem. Torr. Club, 4: 112. 1894.

Perennial from a long large root, diffusely branched at the base, the branches prostrate, pubescent. Leaflets linear, narrowly lanceolate or oblanceolate, 5″–20″ long, obtuse or cuspidate, serrate-dentate, glabrous above, more or less silky beneath, conspicuously veined; flowers in a globose head about 1′ in diameter, whitish, crowded, the slender pedicels 1″–2″ long; standard emarginate-mucronate, striate; calyx silky, the teeth long, subulate.

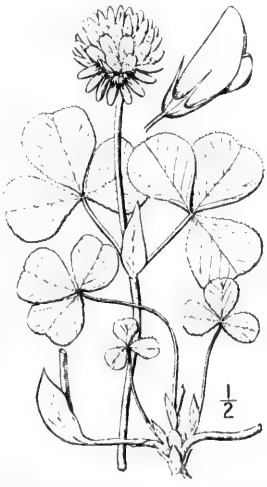
Slopes of Kate's Mountain, Greenbrier Co., W. Va. June.

10. Trifolium reflexum L. Buffalo Clover. (Fig. 2079.)

Trifolium reflexum L. Sp. Pl. 766. 1753.

Annual or biennial, pubescent, ascending, branching, 10′–20′ high. Leaves long-petioled; stipules ovate-lanceolate, acuminate, foliaceous, few-toothed or entire, 8″–12″ long; leaflets all from the same point, short-stalked, oval or obovate, cuneate at the base, obtuse or emarginate at the apex, denticulate, 5″–12″ long; heads peduncled, dense, globose, 1′ in diameter or more; flowers 5″–6″ long, all on slender pedicels, at length 3″–4″ long and reflexed; standard red; wings and keel nearly white; calyx-teeth linear, shorter than the corolla, finely pubescent; pods 3–6-seeded.

In meadows, southern Ontario, western New York and Pennsylvania to Iowa and Nebraska, south to Florida and Texas. April–Aug.

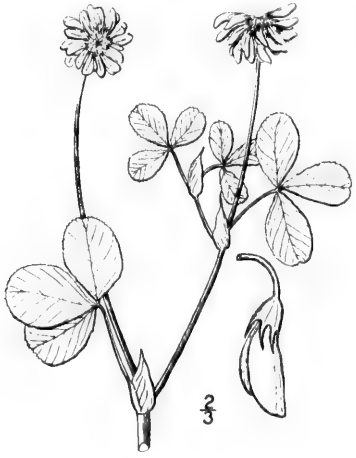


11. Trifolium stoloniferum Muhl. Running Buffalo Clover. (Fig. 2080.)

Trifolium stoloniferum Muhl. Cat. 70. 1813.

Perennial, glabrous, branching, 6′–12′ long, forming runners at the base. Leaves, especially the lower, long-petioled; stipules ovate-lanceolate, acute, membranous, often 1′ long; leaflets all from the same point, short-stalked, obovate or obcordate, broadly cuneate at the base, denticulate, 9″–15″ long; heads terminal, peduncled, nearly 1′ in diameter; flowers white, purplish-tinged, 4″–6″ long; pedicels slender, 3″–4″ long, at length reflexed; calyx-teeth subulate, longer than the tube; pod commonly 2-seeded.

Prairies and dry woods, Ohio to Nebraska, south to Kentucky and Missouri. May–Aug.



12. Trifolium hybridum L. Alsike or Alsatian Clover. (Fig. 2081.)

Trifolium hybridum L. Sp. Pl. 766. 1753.

Perennial, erect or ascending, sometimes rather stout and succulent, 1°–2° high, branching, glabrous or very nearly so. Leaves long-petioled; stipules ovate-lanceolate, acuminate, membranous, 6″–12″ long; leaflets all from the same point, short-stalked, obovate, sometimes emarginate but not obcordate, narrowed or cuneate at the base, serrulate with sharp-pointed teeth, 6″–12″ long; heads globose, long-peduncled; flowers pink, or nearly white, 3″–4″ long; pedicels slender, 1″–2″ long, reflexed when old; corolla 3–4-times as long as the calyx; calyx-teeth subulate, about equalling the tube; pod 2–4-seeded.

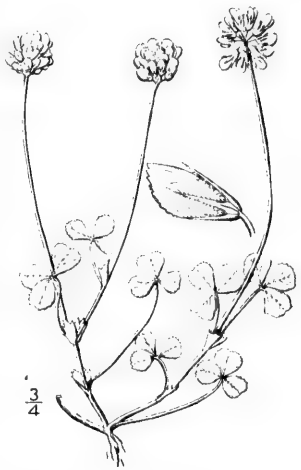
In meadows and waste places, Nova Scotia to Idaho, south to New Jersey and Georgia. Called also Swedish Clover. Sometimes cultivated for fodder. May–Oct.

13. Trifolium Carolinianum Michx. Carolina Clover. (Fig. 2082.)

Trifolium Carolinianum Michx. Fl. Bor. Am. 2: 58. 1803.

Perennial, pubescent, tufted, ascending or procumbent, much branched from the base, 3′–8′ high. Leaves slender-petioled; stipules ovate or ovate-lanceolate, foliaceous, 2″–4″ long, acute, few-toothed toward the apex, or entire; leaflets all from the same point, short-stalked, obovate, emarginate or obcordate, cuneate at the base, denticulate, 2″–6″ long; heads globose; peduncles slender, elongated; flowers purplish, 2″–3″ long; standard apiculate; pedicels 1″–2″ long, strongly reflexed in fruit; corolla scarcely longer than the calyx; calyx-teeth subulate, longer than the tube; pod about 4-seeded.

In waste places about Philadelphia, and in fields and open places, Virginia to Florida, west to Texas. March–Oct.



14. Trifolium rèpens L. White, Dutch or Honeysuckle Clover. (Fig. 2083.)

Trifolium repens L. Sp. Pl. 767. 1753.

Perennial, glabrous, or with a few scattered hairs, branching at the base, the branches creeping, often rooting at the nodes, 4′–12′ long. Leaves long-petioled; stipules ovate-lanceolate membranous, acute, 2″–5″ long; leaflets all from the same point, short-stalked, obovate, emarginate or obcordate, broadly cuneate at the base, denticulate, 4″–9″ long; heads globose, long-peduncled; flowers white, 3″–5″ long; pedicels 1″–2″ long, finally reflexed; corolla 2–3-times as long as the calyx; calyx-teeth acuminate, somewhat shorter than the tube; pod about 4-seeded.

In fields, waste ground and open places, very common throughout our area and in the southern States. Also in the Northwest. Naturalized from Europe, or perhaps native in the extreme north. Native also of Siberia. Widely distributed in all temperate regions. Leaflets sometimes 4–9. Heads occasionally proliferous. Flowers sometimes pinkish. English names, Sheep's Gowan, Honeystalks, Lamb-sucklings, and sometimes Shamrock. May–Dec.

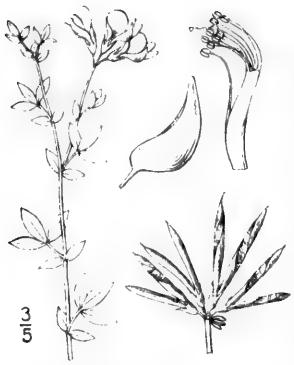
13. LÒTUS L. Sp. Pl. 773. 1753.

[Hosackia Dougl.; Benth. Bot. Reg. *pl. 1257.* 1829.]

Herbs or shrubs, with 1–3-foliolate simple or pinnate leaves, and solitary or clustered reddish yellow or white flowers. Calyx-teeth nearly equal. Petals free from the stamen-tube; standard ovate or orbicular; wings oblong or obovate; keel incurved, obtuse or beaked. Stamens diadelphous (1 and 9); anthers all alike. Ovary sessile, 1–several-ovuled. Pod linear or oblong, flattish or terete, 2-valved, 1–several-seeded, septate or continuous between the seeds. [The Greek name of several different plants.]

About 120 species, of wide geographic distribution. Besides the following, some 40 others occur in the western and southwestern United States.

Corolla yellow; flowers umbelled. 1. *L. corniculatus.*
Corolla rose-color; flowers solitary in the axils. 2. *L. Americanus.*



1. Lotus corniculàtus L. Bird's-foot Trefoil. Ground Honeysuckle. Bloom-fell. (Fig. 2084.)

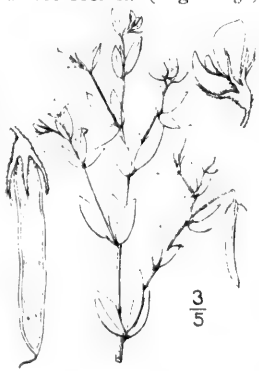
Lotus corniculatus L. Sp. Pl. 775. 1753.

Perennial from a long root, appressed-pubescent or glabrate. Stems slender, decumbent, or ascending, 3′–2° long; leaves 3-foliolate, short-petioled; leaflets obovate, oblanceolate or oblong, 3″–8″ long, obtuse or acute; stipules similar to the leaflets, and often as large; peduncles elongated, sometimes 4′–6′ long, umbellately 3–12-flowered; calyx-lobes acute, as long as the tube, or shorter; corolla bright yellow, 6″–9″ long, or the standard reddish; pods linear, about 1′ long, spreading, several-seeded.

In waste places and on ballast, New Brunswick, and about the seaports of the Eastern and Middle States. Adventive from Europe. Native also of Asia, and widely distributed as a weed. Crowtoes (Milton), Cat's-clover. Sheepfoot. June–Sept.

2. Lotus Americànus (Nutt.) Bisch. Prairie Bird's-foot Trefoil. (Fig. 2085.)

Trigonella Americana Nutt. Gen. 2: 120. 1818.
Lotus sericeus Pursh, Fl. Am. Sept. 489. 1814. Not DC. 1813.
Hosackia Purshiana Benth. Bot. Reg. under *pl.* 1257. 1829.
Lotus Americanus Bisch. Litt. Ber. Linnaea, **14**: 132. 1840.



Annual, erect, branched, villous-pubescent, or glabrate, 10′–20′ high. Leaves 3-foliolate, or the upper sometimes 1-foliolate, sessile or the lower on petioles about 1″ long; stipules minute or none; middle leaflet slightly longer-stalked than the lateral ones, oblong, the lateral lanceolate and more or less inequilateral, rounded at the base, 5″–8″ long, 2″–3″ wide; peduncles axillary, 1-flowered, 9″–12″ long in fruit, leafy-bracted at the summit; flowers rose-color, about 2″ long, the standard darker-veined; keel acute; calyx-lobes linear, about twice the length of the tube; pods linear, straight, about 1′ long, acute, glabrous, 4–7-seeded, deflexed at maturity.

In dry soil, Minnesota to Missouri, Arkansas, New Mexico and Sonora. Summer.

14. PSORÀLEA L. Sp. Pl. 762. 1753.

Herbs or shrubs, with dark glands or pellucid dots, 1–5-foliolate leaves, and purple blue pink or white flowers, mainly in spikes or racemes. Stipules broad. Calyx-lobes equal or the lower longest, or the two upper ones sometimes united. Standard ovate or orbicular, clawed; wings oblong or falcate; keel incurved, obtuse. Stamens monadelphous or diadelphous; anthers uniform. Ovary sessile or short-stalked, 1-ovuled. Pod ovoid, short, indehiscent, 1-seeded. [Greek, scurfy, from the glandular dots, whence the name Scurfy-pea.]

About 110 species, of wide geographic distribution. In addition to the following, about 20 others occur in the western United States.

Leaves digitately 3–5-foliolate (leaflets all from the same point).
- Plants leafy-stemmed.
  - Flowers small, 2″–4″ long.
    - Pods subglobose.
      - Leaflets narrowly oblong. — 1. *P. lanceolata.*
      - Leaflets, except those of basal leaves, filiform-linear. — 2. *P. micrantha.*
    - Pods ovoid, or ovate.
      - Pods with a short, mostly abrupt beak.
        - Flowers few, scattered in slender elongated racemes. — 3. *P. tenuiflora.*
        - Flowers numerous, clustered, or crowded in racemes.
          - Leaflets oblong-obovate. — 4. *P. obtusiloba.*
          - Leaflets oblong. — 5. *P. floribunda.*
      - Pods with a slender sharp or elongated beak.
        - Leaflets linear; flowers in loose elongated racemes. — 6. *P. linearifolia.*
        - Leaflets linear-lanceolate, oblong, oblanceolate or obovate; flowers spiked
          - Leaflets oblanceolate or obovate; pubescence gray. — 7. *P. collina.*
          - Leaflets linear-lanceolate or oblong; pubescence silvery.
            - Leaflets linear-lanceolate; calyx inflated in fruit. — 8. *P. digitata.*
            - Leaflets oblong; calyx not inflated in fruit. — 9. *P. argophylla.*
  - Flowers large, 6″–8″ long, densely spicate. — 10. *P. cuspidata.*

Plants acaulescent, or nearly so, low, spreading; roots tuberous.
Leaflets oblong-cuneate. 11. *P. esculenta.*
Leaflets linear-oblong. 12. *P. hypogaea.*
Leaves pinnately 3-foliolate (the terminal leaflet stalked).
Racemes short, on peduncles about equalling the leaves. 13. *P. stipulata.*
Racemes spicate, elongated, much exceeding the leaves.
Leaflets oblong-lanceolate, obtuse; pods 2″ long, nearly orbicular. 14. *P. pedunculata.*
Leaflets ovate-lanceolate, acuminate; pods 4″–5″ long, obliquely ovate. 15. *P. Onobrychis.*

1. Psoralea lanceolàta Pursh. Lance-leaved Psoralea. (Fig. 2086.)

Psoralea lanceolata Pursh, Fl. Am. Sept. 475. 1814.

Erect, or assurgent, nearly glabrous, much branched, densely dark-glandular, light green, 1°–2° high. Root not tuberous; petioles equalling or shorter than the leaves; stipules linear, 3″–4″ long, early deciduous; leaflets 3, digitate, sessile, sometimes with a few scattered hairs, linear or oblanceolate, entire, varying from acute to obtuse or even emarginate at the apex, narrowed or cuneate at the base, 8″–15″ long, 2″–4″ wide; peduncles slender; spikes dense, short, 4″–6″ thick, 6–10-flowered; bracts membranous, caducous; flowers bluish-white, 3″ long; corolla 2–3 times as long as the calyx; pod subglobose, about 2″ long, sparingly pubescent, or glabrous, punctate; seed globose, brown.

In dry soil, Kansas to the Northwest Territory, west to Arizona, Washington and British Columbia. June–July.

2. Psoralea micrántha A. Gray. Small-flowered Psoralea. (Fig. 2087.)

P. micrantha A. Gray; Torr. Pac. R. R. Rep. 4: 77. 1856.

Assurgent, 1° high or more, from a horizontal root or long slender rootstock often 3° in length; stems glabrous, with scattered brown glands, and often with broadly lanceolate or ovate scales at the base. Stipules setaceous; leaves 3-foliolate, crowded; leaflets linear or filiform-linear, ½′–2′ long, the basal ones oblong or cuneate-oblong; peduncles about the length of the leaves; flowers about 2″ long, white or bluish in small heads or loosely scattered in short spikes; bracts minute; calyx somewhat pubescent, glandular, the lobes about equal; pod globose, over 2½″ long, glabrous, light brownish with raised darker glands and a straight slender beak; seed globose, somewhat flattened when dry, brown, smooth and shining.

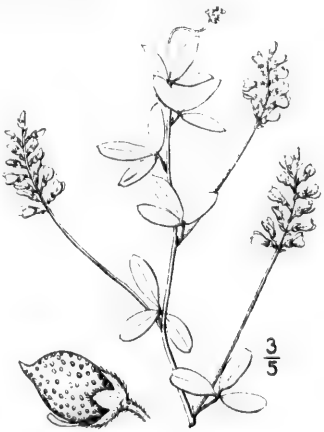
Prairies, Nebraska to Arizona. June–Aug.

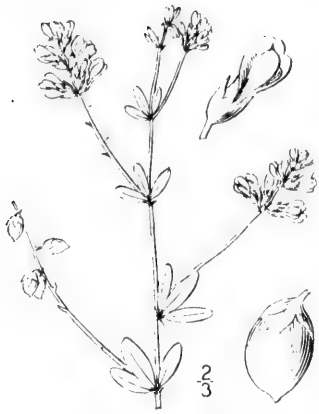
3. Psoralea tenuiflòra Pursh. Few-flowered Psoralea. (Fig. 2088.)

Psoralea tenuiflora Pursh, Fl. Am. Sept. 475. 1814.

Erect, finely appressed-canescent, especially when young, punctate, much branched, slender, 2°–4° high. Root not tuberous; leaves short-petioled, digitately 3–5-foliolate; stipules subulate, 1″–2″ long; leaflets very short-stalked, entire, oval, oblong or elliptic, 6″–10″ long, 1½″–3″ wide, obtuse and mucronulate at the apex, narrowed or cuneate at the base; peduncles slender, longer than the leaves; racemes loosely 6–14-flowered, 1′–3′ long; bracts scale-like, persistent; flowers purplish, 2″ long; corolla about twice the length of the calyx; pod ovate, glabrous, punctate, 2″–3″ long; seed ovoid, brown.

Prairies, Illinois and Minnesota to Texas and Sonora, west to Colorado and Montana. May–Oct.





4. Psoralea obtusíloba T. & G. Black-dotted Psoralea. (Fig. 2089.)

Psoralea obtusiloba T. & G. Fl. N. A. 1: 300. 1838.
Psoralea tenuiflora var. *obtusiloba* S. Wats. Bibliogr. Ind. 1: 255. 1878.

Erect, 1°–2° high, branches spreading, stems more or less canescent with fine appressed silky white hairs. Stipules small, setaceous; petioles much shorter than the leaflets, the upper leaves often nearly sessile; leaves 3-foliolate, or the basal often 4–5-foliolate; leaflets 2½″–15″ long, 1½″–7″ wide, oblong-obovate, retuse or mucronulate, covered on both surfaces with minute black glands, glabrous above, minutely canescent beneath; racemes long; flowers loosely scattered; bracts very small, ovate, cuspidate; calyx canescent with white silky hairs, the lobes glandular, obtuse or acute; pod ovate, about 4″ long; seed compressed, obliquely ovoid, brown.

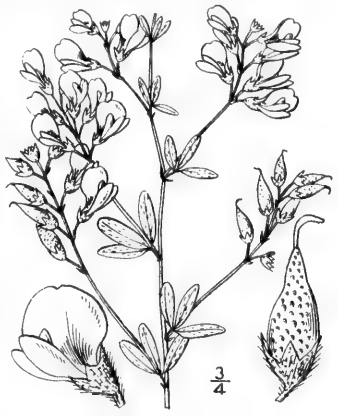
Prairies, Kansas (?), Texas to Arizona and Mexico.

5. Psoralea floribúnda Nutt. Many-flowered Psoralea. (Fig. 2090.)

P. floribunda Nutt.; T. & G. Fl. N. A. 1: 300. 1838.

Stem 1°–4° high, profusely branching, canescent, not glandular. Petioles 2½″–15″ long, mostly shorter than the leaflets; stipules 1½″–3½″ long, subulate, sometimes reflexed; leaves 3–5- sometimes 7-foliolate; leaflets 5″–18″ long, 1½″–4″ wide, oblong, glandular on both surfaces, rugose, glabrous or with a few scattered hairs above, canescent with closely appressed white hairs beneath; peduncles 2′–7′ long; spikes oblong or cylindric, usually many-flowered, the flowers about 4″ long, at length interrupted and appearing almost as if whorled; bracts 1‴–1½″ long, lanceolate, hirsute; calyx canescent, the lobes triangular, acute, the lower one the longest; pod ovoid, glabrous, light brown, covered with darker glands, beak short, stout, straight; seed 2½″ long, compressed.

Prairies, Illinois to Montana, Texas, Arizona and Mexico. May–Oct.



6. Psoralea linearifòlia T. & G. Narrow-leaved Psoralea. (Fig. 2091.)

Psoralea linearifolia T. & G. Fl. N. A. 1: 300. 1838.

Erect, 1°–2° high, widely branching; stems not always glandular, glabrous, or sparingly pubescent with appressed hairs. Stipules 1½″–3¼″ long, lanceolate or setaceous; leaves sessile or short-petioled, 1–3-foliolate; leaflets 5″–15″ long, 1″–2″ wide, linear, rugose, glandular, glabrous or with a few appressed hairs; peduncles 1′–9′ long; flowers blue, loosely scattered, 1–4 together on slender pedicels 2″–4″ long; bracts 1″ long, ovate, acuminate; mature calyx campanulate, 2″ long, glandular, slightly pubescent; pod 4″ long, narrowly ovoid or oblong, glandular, with a short stout straightish beak; seed flat, oblique, dark brown.

Prairies, Nebraska to Texas. May–Aug.

7. **Psoralea collìna** Rydberg. Nebraska Psoralea. (Fig. 2092.)

Psoralea collina Rydberg, Fl. Neb. 21: 54. *f.* 6, 7. 1895.

Ascending or diffuse, somewhat grayish-pubescent, 1°–2° high. Stipules narrow, 1″–4″ long; leaves 3-foliolate, or sometimes 5-foliolate; leaflets obovate or oblanceolate, mucronate, mostly glabrous above; bracts pointed, 1½″–2″ long; peduncles slender, 1′–4′ long; flowers about 3″ long; calyx-segments linear-lanceolate, much shorter than the ovate pod, the lower one a little longer than the others; pod 2½″–3″ long, tipped with a flat straight beak about 1¼″ long.

Hillsides, western Nebraska. July-Aug.

8. **Psoralea digitàta** Nutt. Digitate Psoralea. (Fig. 2093.)

Psoralea digitata Nutt.; T. & G. Fl. N. A. 1: 300. 1838.

Canescent with appressed hairs, slender, erect, widely branching, 1°–2° high. Petioles shorter than or sometimes a very little exceeding the leaves; stipules linear, 1½″–2″ long; peduncles much elongated, often 3–5 times as long as the leaves; leaflets 5, or of the upper leaves 3, digitate, short-stalked, oblong-linear or oblanceolate, 9″–18″ long, 2″–3″ wide, mostly obtuse or mucronulate at the apex, narrowed or cuneate at the base; inflorescence spicate, interrupted, the blue flowers short-pedicelled or sessile in clusters of 3–5; corolla 4″–5″ long, exceeding the broad mucronate bracts; calyx-lobes acute; pod ovoid, flattish, pubescent.

Prairies, South Dakota to Kansas and Texas. June–July.

9. **Psoralea argophýlla** Pursh. Silver-leaf Psoralea. (Fig. 2094.)

Psoralea incana Nutt. Fraser Cat. Name only. 1813.
Psoralea argophylla Pursh, Fl. Am. Sept. 475. 1814.

Erect, widely branched, densely silvery pubescent with white appressed hairs throughout. Stem often zigzag, 1°–3° high; petioles shorter than or equalling the leaves; stipules narrowly linear, 3″–4″ long; leaflets 3–5, digitate, very short-stalked, oval, oblong or obovate, obtuse and mucronate or acutish at the apex, narrowed or rounded at the base, 8″–15″ long, 3″–6″ wide; peduncles exceeding the leaves; inflorescence spicate, interrupted, the blue flowers sessile, about 4″ long, in clusters of 2–4; bracts lanceolate, slightly longer than the corolla, persistent; calyx-lobes lanceolate; pod ovate, straight-beaked.

Prairies, Wisconsin and Minnesota to the Northwest Territory, south to Kansas and New Mexico. June-Aug.

10. Psoralea cuspidàta Pursh. Large-bracted Psoralea. (Fig. 2095.)

Psoralea macrorhiza Nutt. Fraser's Cat. Name only. 1813.
Psoralea cuspidata Pursh, Fl. Am. Sept. 741. 1814.
Psoralea cryptocarpa T. & G. Fl. N. A. 1: 301. 1838.

Erect or ascending, stout, branched, finely appressed-pubescent, at least above, 1°–2° high, from a long deep tuberous-thickened root. Petioles equalling or shorter than the leaves, 1½′–2′ long; stipules linear, acuminate, 6″–8″ long; leaflets 5, digitate, short-stalked, entire, broadly oblanceolate or oval, obtuse and commonly mucronate at the apex, narrowed or cuneate at the base, 1′–2′ long, 4″–7″ wide; spikes oblong, dense, 1½′–3′ long, 1′–1½′ thick; peduncles longer than the petioles; bracts lanceolate, long-cuspidate, equalling or exceeding the bluish corolla; pod oval, membranous, enclosed in the calyx.

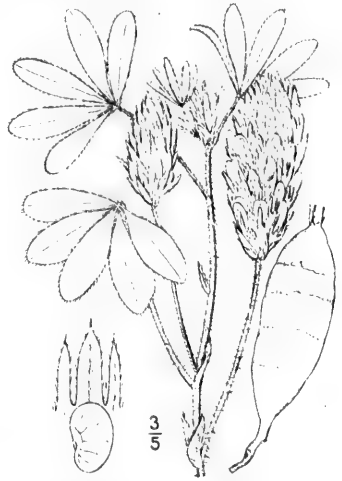
Prairies, Northwest Territory to Kansas, Colorado, Arkansas and Texas. May–June.

11. Psoralea esculénta Pursh. Pomme Blanche. Prairie Apple or Turnip. (Fig. 2096.)

Psoralea esculenta Pursh, Fl. Am. Sept. 475. 1814.

Rather stout, erect from a large farinaceous root or cluster of roots, little branched, 4′–18′ high, densely villous-pubescent with whitish hairs. Lower petioles 2–4 times longer than the leaves; stipules lanceolate, 8″–12″ long; leaflets 5, digitate, short-stalked, oval or obovate, entire, obtuse, narrowed at base, 1′–2′ long, 4″–10″ wide; peduncles equalling or longer than the petioles; spikes oblong, dense, 1½′–3′ long, 1′–1½′ thick; bracts lanceolate or ovate, acute, 5″–8″ long, nearly equalling the bluish corolla; pod oblong, glabrous, about 2½″ long, slightly wrinkled, enclosed in the calyx-tube.

Prairies, Manitoba and Dakota to Nebraska and Texas. Called Indian or Missouri Bread-root. June.



12. Psoralea hypogaèa Nutt. Small Indian Bread-root. (Fig. 2097.)

Psoralea hypogaea Nutt.; T. & G. Fl. N. A. 1: 302. 1838.

Similar to the preceding species, but smaller, nearly acaulescent, the stem hardly rising above the ground, densely pubescent with appressed whitish hairs. Petioles 2–4 times as long as the leaves; stipules oblong, acutish, about 6″ long; leaflets 5, digitate, sessile or nearly so, linear-oblong or oblanceolate, 1′–1½′ long, 2″–3″ wide, entire, often mucronate-tipped, narrowed at the base; peduncles ½′–3′ long; spikes short, dense, ½′–1′ long; bracts ovate, acute, shorter than or nearly equalling the dull blue corolla; pod 5″ long or more, somewhat hirsute, slender-beaked.

Prairies, Nebraska and Colorado to Texas and New Mexico. May–June.

13. Psoralea stipulàta T. & G. Large-stipuled Psoralea. (Fig. 2098.)

Psoralea stipulata T. & G. Fl. N. A. 1: 688. 1840.

Sparingly pubescent or glabrous, nearly glandless, branched, diffuse or ascending, stems 1°–2° long. Petioles shorter than the leaves; stipules foliaceous, ovate or lanceolate, about 6″ long; leaves pinnately 3-foliolate; leaflets oval or elliptic, 1′–2′ long, entire, narrowed at the base, obtusish at the apex, the terminal one on a stalk 3″–6″ long; peduncles mainly axillary, longer than the petioles; racemes short, dense, 1′ long or less; flowers purple, 4″–5″ long; bracts ovate, acute or acuminate, membranous, deciduous; pod not seen.

In rocky places, Ohio, Indiana and Kentucky. June–July.

14. Psoralea pedunculàta (Mill.) Vail. Samson's Snakeroot. (Fig. 2099.)

Hedysarum pedunculatum Mill. Gard. Dict. Ed. 8, no. 17. 1768.
Psoralea melilotoides Michx. Fl. Bor. Am. 2: 58. 1803.
Psoralea pedunculata Vail, Bull. Torr. Club, 21: 114. 1891.

Erect, slender, sparingly branched, 1°–2½° high, more or less pubescent and rough. Glands of the foliage small and inconspicuous; leaves petioled, pinnately 3-foliolate; petioles shorter than or equalling the leaflets; stipules subulate; leaflets oblong-lanceolate, 1½′–3′ long, 4″–7″ wide, entire, obtuse at each end, the apex mucronulate, the terminal one on a stalk 2″–6″ long; racemes axillary and terminal, on peduncles much exceeding the leaves, rather loosely flowered, 2′–5′ long; bracts ovate-lanceolate, acuminate, early deciduous, glandular; flowers purplish, about 2″ long; pod nearly orbicular, strongly wrinkled transversely.

In dry soil, Kansas to Indiana and North Carolina, south to Texas and Florida. March–July.

15. Psoralea Onóbrychis Nutt. Sainfoin Psoralea. (Fig. 2100.)

Stylosanthes racemosa Nutt. Fraser Cat. Name only. 1813.
Psoralea Onobrychis Nutt. Gen. 2: 104. 1818.

Glabrous or slightly pubescent, branched, 3°–6° high. Glands of the foliage few and small; stipules subulate; petioles about equalling the 3-foliolate leaves; leaflets ovate-lanceolate, 2′–4′ long, 1′–2′ wide, entire, rounded or truncate at the base, acuminate at the apex, the terminal one on a stalk about 1′ long; racemes numerous, axillary and terminal, very slender and loosely flowered, 3′–6′ long; peduncles equalling or shorter than the leaves; flowers purplish, 1½′–2′ long; pod obliquely ovoid, 4″–6″ long, transversely wrinkled and roughened with points.

Along rivers, Missouri to Ohio, southern Ontario, Kentucky and South Carolina. June–July.

15. AMÓRPHA L. Sp. Pl. 713. 1753.

Glandular-punctate shrubs, with odd-pinnate leaves, and small violet blue or white flowers, in dense terminal spicate racemes. Calyx-teeth nearly equal, or the lower ones longer; standard obovate, erect, clawed, folded around the stamens and style; wings and keel none. Stamens monadelphous below; anthers all alike. Ovary sessile, 2-celled; style curved; stigma terminal. Pod short, oblong, curved, nearly indehiscent, 1–2-seeded. [Greek, deformed, four petals being absent.]

About 10 species, natives of North America and Mexico.

Tall shrub; leaflets 1′–2′ long; pod usually 2-seeded. 1. *A. fruticosa.*
Low shrubs; leaflets 3′′–6′′ long; pod 1-seeded.
Glabrous or nearly so; spikes commonly solitary. 2. *A. nana.*
Densely canescent; spikes commonly clustered. 3. *A. canescens.*

1. Amorpha fruticòsa L. False or Bastard Indigo. (Fig. 2101.)

Amorpha fruticosa L. Sp. Pl. 713. 1753.

A shrub 5°–20° high, with pubescent or glabrous foliage. Leaves petioled, 6′–16′ long; leaflets 11–21, distant, short-stalked, oval or elliptic, obtuse and mucronulate, or sometimes slightly emarginate at the apex, rounded or slightly narrowed at the base, 1′–2′ long, 5′′–10′′ wide, entire; spike-like racemes dense, clustered or solitary, 3′–6′ long; flowers short-pedicelled, 3′′–4′′ long; standard violet-purple, 2–3 times as long as the calyx, emarginate; stamens exserted; pod glabrous, glandular, thick-stalked, 3′′–4′′ long, acute, usually 2-seeded.

Along streams, Ohio to Minnesota and Manitoba, south to Florida, Colorado and Chihuahua. Also escaped from cultivation in the Middle States. May–July.

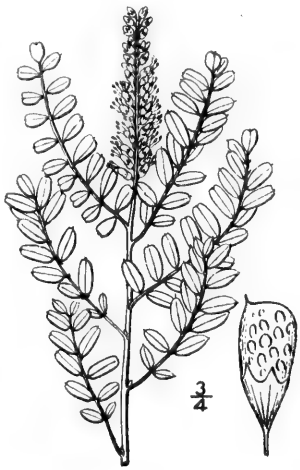
2. Amorpha nàna Nutt. Fragrant False Indigo. (Fig. 2102.)

Amorpha nana Nutt. Fras. Cat. 1813.

Amorpha microphylla Pursh, Fl. Am. Sept. 466. 1814.

A low bushy shrub, seldom more than 1° high, glabrous or nearly so throughout. Leaves short-petioled, numerous, 1′–3′ long; leaflets 13–19, rigid, short-stalked, oval or oblong, rounded or emarginate and mucronate at the apex, obtuse or acute at the base, 3′′–6′′ long, 1½′′–2½′′ wide; spike-like racemes commonly solitary; flowers fragrant; standard purplish, about 2′′ long; calyx-teeth acuminate; pod short, 1-seeded.

Prairies, Iowa to Minnesota, Dakota and the Northwest Territory. May.

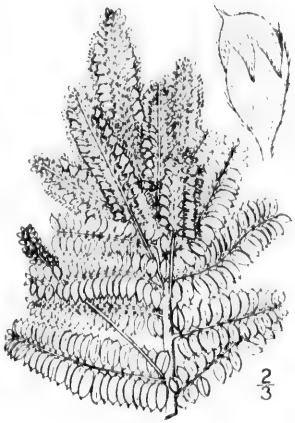


3. Amorpha canéscens Pursh. Lead-plant. Shoe-strings. (Fig. 2103.)

Amorpha canescens Pursh, Fl. Am. Sept. 467. 1814.

A bushy shrub, 1°–3° high, densely white-canescent all over. Leaves sessile or very nearly so, numerous, 2′–4′ long; leaflets 21–49, approximate, almost sessile, oval or short-lanceolate, obtuse or acutish and mucronulate at the apex, rounded or truncate at the base, 4″–7″ long, 2″–3″ wide, less pubescent above than beneath; spikes usually densely clustered, 2′–7′ long; calyx-teeth lanceolate; standard bright blue, nearly orbicular or obcordate, about 2″ long; pod slightly exceeding the calyx, 1-seeded.

Prairies, Indiana to Minnesota and Manitoba, south to Louisiana and Texas. Named from its leaden-hue, not as indicative of lead. July–Aug.



16. PAROSÈLA Cav. Desc. 185. 1802.

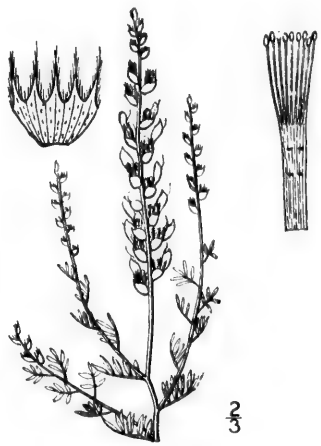
[DALEA Willd. Sp. Pl. 3: 1336. 1803. Not P. Br. 1756.]

Herbs, or sometimes shrubs, with usually glandular-punctate foliage, odd-pinnate leaves, minute stipules, and small purple white or yellow flowers in terminal or lateral spikes. Calyx-teeth nearly equal; standard cordate or auriculate, clawed; wings and keel mainly exceeding the standard, adnate by their claws to the lower part of the stamen-tube. Stamens 10 or 9, monadelphous; anthers uniform. Ovary sessile or short-stalked; ovules 2 or 3; style subulate. Pod included in the calyx, membranous, mostly indehiscent and 1-seeded. [Anagram of *Psoralea*.]

About 110 species, natives of western North America, Mexico and the Andean region of South America. In addition to the following some 42 others occur in the western United States.

Spikes elongated, narrow, loosely flowered.
- Foliage glabrous; corolla white; leaflets linear. 1. *P. enneandra.*
- Foliage pubescent; corolla purple; leaflets obovate. 2. *P. lanata.*

Spikes oblong, thick, densely flowered.
- Foliage glabrous; corolla pink or white; leaflets 15–41. 3. *P. Dalea.*
- Foliage pubescent; corolla yellow; leaflets 5–9. 4. *P. aurea.*



1. Parosela enneándra (Nutt.) Britton. Slender Parosela. (Fig. 2104.)

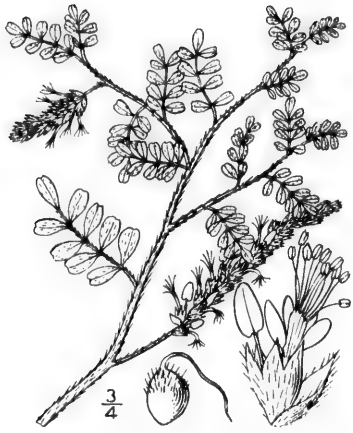
Dalea enneandra Nutt. Fraser's Cat. 1813.

Dalea laxiflora Pursh, Fl. Am. Sept. 741. 1814.

Parosela enneandra Britton, Mem. Torr. Club, 5: 196. 1894.

Erect, glabrous, 1°–4° high, with numerous slender ascending branches. Leaflets 5–11, linear or linear-oblong, obtusish, 2″–5″ long, ½″–1″ wide, narrowed at the base, nearly sessile; spikes numerous, 2′–5′ long, loosely flowered; bracts obtuse, nearly orbicular, punctate, membranous-margined, 1½″ long, often mucronate; flowers 4″–6″ long; calyx-teeth subulate, beautifully plumose, shorter than the white corolla; standard small, cordate; keel exceeding the wings; stamens 9.

Prairies, Iowa to Nebraska and Colorado, south to Mississippi and Texas. June–Aug.



2. Parosela lanàta (Spreng.) Britton. Wooly Parosela. (Fig. 2105.)

Dalea lanata Spreng. Syst. Veg. **3**: 327. 1826.
D. lanuginosa Nutt.; T. & G. Fl. N. A. **1**: 307. 1838.
Parosela lanata Britton, Mem. Torr. Club, **5**: 196. 1894.

Decumbent, branching, softly and densely pubescent throughout, 1°–2° long. Leaflets 9–13, obovate, obtuse, truncate or emarginate at the apex, narrowed or cuneate at the base, nearly sessile, 4″–6″ long, about 2″ wide above; spikes numerous, short-peduncled, 1′–4′ long, rather loosely flowered; bracts oval or obovate, long-acuminate or mucronate, about 1½″ long; flowers 3″ long; corolla deep purple or red; calyx-teeth subulate, plumose; standard cordate, slightly exceeding the wings and keel; stamens 10.

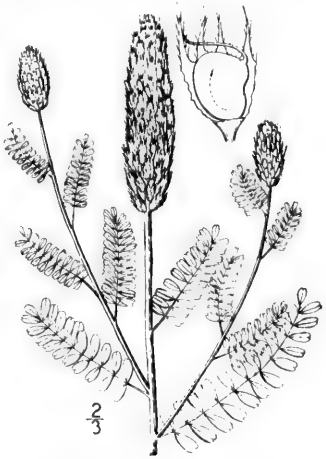
Prairies, Kansas to Texas, Utah and New Mexico. Summer.

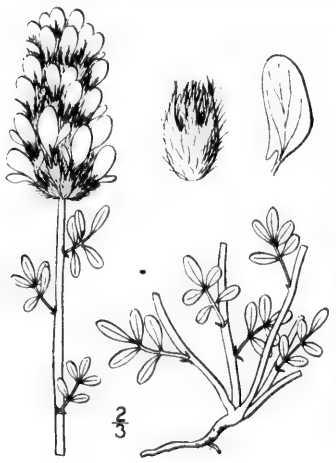
3. Parosela Dàlea (L.) Britton. Pink Parosela. (Fig. 2106.)

Psoralea Dalea L. Sp. Pl. 764. 1753.
Dalea alopecuroides Willd. Sp. Pl. **3**: 1336. 1803.
Parosela Dalea Britton, Mem. Torr. Club, **5**: 196. 1894.

Erect, branched, 1°–2° high, foliage glabrous. Leaflets 15–41, oblanceolate or linear-oblong, obtuse at the apex, narrowed at the base, sessile or nearly so, 2″–3″ long, ½″–1″ wide; spikes terminal, oblong, very dense, 1′–2′ long, about 5″ thick, peduncled; bracts ovate or lanceolate, acuminate, deciduous, about equalling the calyx, hyaline margined; calyx very silky-pubescent, its teeth linear-lanceolate, acuminate, plumose; corolla pink, or whitish, about 2″ long; keel about equalling the wings.

Prairies, Illinois to Minnesota and Nebraska, south to Texas, Mexico and New Mexico. Aug.–Sept.





4. Parosela aùrea (Nutt.) Britton. Golden Parosela. (Fig. 2107.)

Dalea aurea Nutt. Fraser's Cat. 1813.
Psoralea aurea Poir. in Lam. Encycl. Suppl. **4**: 590. 1816.
Parosela aurea Britton, Mem. Torr. Club, **5**: 196. 1894.

Erect, pubescent, simple, 1°–2° high. Leaflets 5–9, sessile, rather distant, obovate, oblong or oblanceolate, obtuse at the apex, narrowed at the base, 4″–6″ long, 1½″–2½″ wide; spikes solitary, short-peduncled, ovoid or globose, very dense, 1′–3′ long, 6″–8″ thick; bracts ovate, mucronate, shorter than the densely plumose and pubescent calyx-teeth; corolla yellow, 4″–5″ long; standard much shorter than the wings and keel.

Prairies, Missouri to Texas. Summer.

17. KUHNÍSTERA Lam. Encycl. 3: 370. 1789.

[PETALOSTEMON Michx. Fl. Bor. Am. 2: 48. 1803.]

Perennial glandular-punctate herbs, with long or deep roots, odd-pinnate leaves, and pink purple or white spicate or capitate flowers. Calyx-teeth nearly equal. Petals on long slender claws; standard oblong or cordate; wings and keel-petals similar to each other, their claws adnate to the sheath of the stamen-tube almost to its summit. Stamens 5, alternate with the petals. Ovary sessile, 2-ovuled; style subulate. Pod membranous, included in the calyx, 1–2-seeded. [Named from the resemblance of these plants to the genus *Kuhnia*.]

About 35 species, natives of North America and Mexico.

Foliage glabrous or very slightly pubescent.
- Flowers white; leaflets 3–9.
  - Leaflets oblong, linear-oblong or oblanceolate; spikes cylindric or oblong.
    - Calyx villous-pubescent. 1. *K. compacta.*
    - Calyx glabrous or nearly so.
      - Stem little branched; spikes cylindric; leaflets ½′–1′ long, thin. 2. *K. candida.*
      - Stem much branched; spikes oblong; leaflets smaller, firm. 3. *K. oligophylla.*
  - Leaflets narrowly linear; heads globose or short. 4. *K. multiflora.*
- Flowers pink or purple.
  - Leaflets 3–5; calyx silky-pubescent.
    - Bracts glabrous; leaflets mucronulate. 5. *K. purpurea.*
    - Bracts silky-pubescent; leaflets obtuse. 6. *K. lenuifolia.*
  - Leaflets 13–31; calyx glabrous. 7. *K. foliosa.*

Foliage silky-pubescent; leaflets 9–17. 8. *K. villosa.*

1. Kuhnistera compácta (Spreng.) Kuntze. Dense-flowered Prairie-clover. (Fig. 2108.)

Dalea compacta Spreng. Syst. Veg. 3: 327. 1826.
Petalostemon macrostachyus Torr. Ann. Lyc. 2: 176. 1828.
Petalostemon compactus Swezey, Nebraska Flow. Pl. 6. 1891.
Kuhnistera compacta Kuntze, Rev. Gen. Pl. 192. 1891.

Erect, dotted with sessile glands, branched, 1°–2½° high. Leaflets 5–7, glabrous, short-stalked, oblong-lanceolate or linear-oblong, acute or obtusish, dotted beneath, 6″–12″ long, about 2″ wide; peduncles terminal, elongated, not bracted; spikes cylindric, 2′–6′ long, about 6″ thick, the rachis pubescent; flowers white or nearly so, about 2″ long; bracts awn-pointed, longer than the densely villous-pubescent calyx; wings and keel-petals oblong; standard cordate; pod pubescent, enclosed by the calyx.

In dry soil, Nebraska, Colorado and Wyoming. July–Aug.

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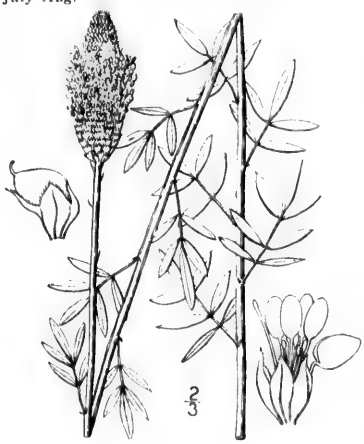

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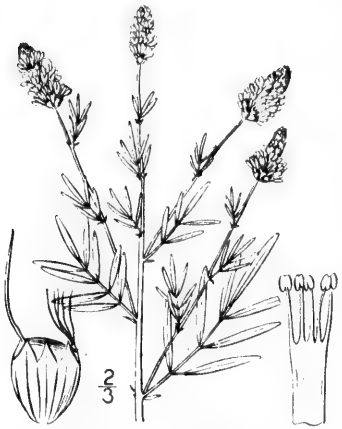
2. Kuhnistera cándida (Willd.) Kuntze. White Prairie-clover. (Fig. 2109.)

Dalea candida Willd. Sp. Pl. 3: 1337. 1803.
Petalostemon candidus Michx. Fl. Bor. Am. 2: 49. 1803.
Kuhnistera candida Kuntze, Rev. Gen. Pl. 192. 1891.

Glabrous, stems erect, assurgent, or rarely prostrate, simple, or sparingly branched, 1°–2° high. Leaves petioled; leaflets 5–9, oblong, or oblanceolate, 8″–12″ long, 1½″–3″ wide, obtusish or acute and often mucronulate at the apex, narrowed at the base, very short-stalked; peduncles terminal, elongated, bracted; spikes cylindric, 1′–4′ long, 5″–6″ thick; bracts awn-pointed, longer than the calyx; corolla white, 2″–3″ long; wings and keel-petals oval; standard cordate; calyx-teeth and pod slightly pubescent.

Prairies, Indiana to Minnesota and the Northwest Territory, south to Louisiana, Texas and Colorado. July–Aug.

3. Kuhnistera oligophýlla (Torr.) Heller. Slender White Prairie-clover. (Fig. 2110.)



Petalostemon gracile var. *oligophyllum* Torr. Emory's Mil. Rec. 139. 1848.
Kuhnistera candida var. *occidentalis* Rydberg, Contr. Nat. Herb. 3: 154. 1895.
Kuhnistera oligophylla Heller, Bull. Torr. Club, 23: 122. 1896.

Glabrous, stem slender, erect or ascending, usually much branched, 1°–2½° tall, the branches straight, ascending. Leaves short-petioled; leaflets about 7 (5–9), linear, linear-oblong or somewhat oblanceolate, firm, varying from less than 1″ wide to 2″ wide, mostly less than 10″ long, or those of the lower leaves larger; spikes oblong or short-cylindric, blunt, less densely flowered than those of the preceding species; bracts lanceolate, acuminate, equalling the calyx, or longer, early deciduous; calyx-teeth usually pubescent; corolla white.

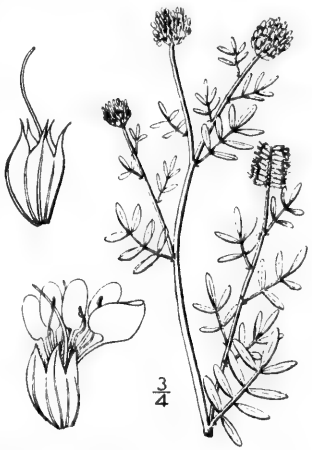
Prairies, South Dakota to Wyoming, Texas, Arizona and Mexico. Root sometimes over 1° long. June–Sept.

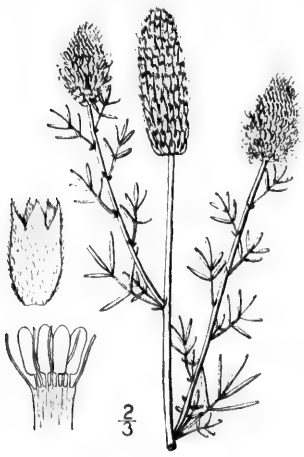
4. Kuhnistera multiflòra (Nutt.) Heller. Round-headed Prairie-clover. (Fig. 2111.)

Petalostemon multiflorus Nutt. Journ. Phil. Acad. 7: 92. 1834.
Kuhnistera multiflora Heller Mem. Torr. Club, 5: 197. 1894.

Glabrous, erect, corymbosely much branched, 1°–2° high. Leaves short-petioled, often clustered; leaflets 3–9, linear or somewhat oblanceolate, obtuse or obtusish at the apex, cuneate or narrowed at the base, short-stalked, 4″–6″ long, ¼″–1″ wide; peduncles elongated; heads globose, 4″–6″ in diameter; bracts subulate, shorter than the calyx; calyx-teeth slightly pubescent; corolla white, about 2″ long; wings and keel-petals ovate, oval, or slightly cordate.

Prairies, Kansas to Texas. Summer.





5. Kuhnistera purpùrea (Vent.) MacM. Violet Prairie-clover. (Fig. 2112.)

Dalea purpurea Vent. Hort. Cels, *pl. 40.* 1800.
Petalostemon violaceus Michx. Fl. Bor. Am. 2: 50. 1803.
Dalea violacea Willd. Sp. Pl. 3: 1337. 1803.
Kuhnistera purpurea MacM. Met. Minn. 329. 1892.

Glabrous or slightly pubescent, erect, 1½°–3° high, branching above. Leaves short-petioled, more or less clustered; leaflets 3–5, narrowly linear, 3″–9″ long, ½″–1″ wide, acutish and often mucronate at the apex, narrowed at the base, very short-stalked; spikes peduncled, oblong or finally cylindric, ½′–2′ long, about 5″ thick; bracts obovate, mucronate, nearly glabrous, equalling the silky-pubescent calyx or shorter; corolla violet or purple, about 2″ long; standard cordate; wings and keel-petals oblong.

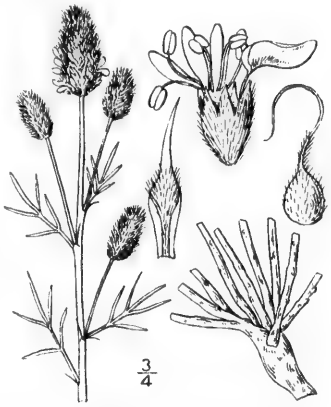
Prairies, Indiana to the Northwest Territory, Texas and Colorado. Often grows with *K. candida*. July–Aug.

6. Kuhnistera tenuifòlia (A. Gray) Kuntze. Silky Prairie-clover. (Fig. 2113.)

Petalostemon tenuifolius A. Gray, Proc. Am. Acad. 11: 73. 1876.
Kuhnistera tenuifolia Kuntze, Rev. Gen. Pl. 192. 1891.

More or less pubescent, erect, branching, 1°–2° high. Leaves short-petioled; leaflets 3–5, linear, obtuse, somewhat involute, dotted with sessile glands, 3″–5″ long, ½″–1″ wide, very short-stalked or sessile; peduncles terminal, elongated, bracted; spikes oblong or cylindric, ½′–1½′ long, about 5″ thick, the rachis pubescent; flowers rose-purple, about 2½″ long; bracts ovate, aristate, silky-pubescent, slightly exceeding the very silky-pubescent calyx; standard nearly orbicular, cordate, cucullate.

In dry soil, Kansas? Arkansas to New Mexico. July–Aug.



7. Kuhnistera foliòsa (A. Gray) Kuntze. Leafy Prairie-clover. (Fig. 2114.)

Petalostemon foliosus A. Gray, Proc. Am. Acad. 7: 336. 1868.
Kuhnistera foliosa Kuntze, Rev. Gen. Pl. 192. 1891.

Erect, branching, or sometimes simple, glabrous throughout, 1°–3° high. Leaves numerous, petioled; leaflets 13–31, close together, short-stalked, linear-oblong or slightly oblanceolate, 4″–7″ long, 1″–1½″ wide, acute or obtuse, mucronate at the apex, narrowed at the base; spikes terminal, long-ovoid or cylindric, 1′–2′ long, 5″–6″ thick, densely-flowered; peduncles short, bracted; bracts lanceolate, awn-pointed, longer than the glabrous calyx; flowers rose-purple, about 2″ long; standard broad, nearly orbicular; wings and keel-petals oval; calyx-teeth finely ciliate.

Along rivers, Illinois and Kentucky. July–Aug.

8. Kuhnistera villòsa (Nutt.) Kuntze. Hairy Prairie-clover. (Fig. 2115.)

Petalostemon villosus Nutt. Gen. 2: 85. 1818.
Dalea villosa Spreng. Syst. Veg. 3: 326. 1826.
Kuhnistera villosa Kuntze, Rev. Gen. Pl. 192. 1891.

Ascending or decumbent from a deep root, branching at the base, densely villous or silky-pubescent all over, 1°–2° high. Leaves short-petioled or nearly sessile; leaflets 9–17, approximate, linear-oblong, or slightly oblanceolate, acute or obtuse and often aristate at the apex, narrowed at the base, 3″–5″ long, 1″–2″ wide; spikes terminal, clustered or solitary, short-peduncled, cylindric, 1′–3′ long, 5″–6″ thick, very dense; bracts lanceolate, acuminate, exceeding the densely villous calyx; corolla rose-purple or rarely white, standard oblong; wings and keel-petals oblong-obovate.

Prairies, Wisconsin to the Saskatchawan region, south to Missouri and Montana. Aug.

18. INDIGÓFERA L. Sp. Pl. 751. 1753.

Herbs or rarely shrubs, often canescent with hairs affixed by the middle, with odd-pinnate leaves, small stipules, and pink or purple spicate or racemose flowers. Calyx-teeth oblique, nearly equal, or the lower longer. Standard ovate or orbicular, sessile or clawed; wings oblong; keel erect, somewhat gibbous, or spurred. Stamens mainly monadelphous; anthers all alike. Ovary sessile or nearly so, 1–∞-ovuled; style slender. Pod linear, 4-angled (in our species), septate between the seeds. [Name from the yield of indigo by some species.]

About 250 species, natives of warm and temperate regions. In addition to the following, some 5 others occur in the southern and southwestern United States.

1. Indigofera leptosépala Nutt. Wild or Western Indigo-plant. (Fig. 2116.)

Indigofera leptosepala Nutt.; T. & G. Fl. N. A. 1: 298. 1838.

Perennial, decumbent, cinereous-pubescent, slender, branching, 6′–24′ long. Leaves short-petioled; leaflets 5–9, oblanceolate or oblong-linear, 3″–12″ long, 1″–3″ wide, obtuse and often mucronulate at the apex, narrowed or cuneate at the base, short-stalked; spikes peduncled, loosely few-flowered; flowers pink or purplish, about 3″ long; calyx-teeth subulate, equal; pods linear, acute, obtusely 4-angled, sessile in the calyx, 8″–12″ long, 1″ thick, reflexed at maturity.

Prairies, Kansas to Texas and Mexico, east to Florida. May–Nov.

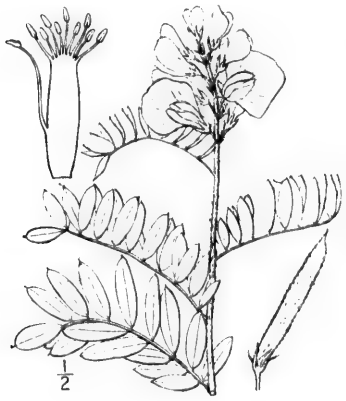
19. CRÁCCA L. Sp. Pl. 752. 1753.

[Tephrosia Pers. Syn. 2: 328. 1807.]

Herbs, sometimes slightly shrubby, with odd-pinnate not punctate leaves, and purple red or white flowers in terminal or lateral racemes or short clusters. Stipules small. Leaflets entire. Calyx-teeth usually nearly equal. Petals all clawed. Standard orbicular or broadly ovate; wings obliquely obovate or oblong; keel curved. Stamens monadelphous or diadelphous; anthers all alike. Ovary sessile; ovules several or many. Pod linear, flat, 2-valved, several-seeded, continuous, or with membranous septa between the seeds. [Latin, vetch.]

About 120 species, mainly natives of warm and tropical regions. Besides the following, eleven species occur in the southern and southwestern United States.

Raceme terminal, dense, nearly sessile, many-flowered.	1. *C. Virginiana.*
Peduncles lateral and terminal, elongated, few-flowered.	
Villous; flowers in an interrupted spike or raceme.	2. *C. spicata.*
Pubescent; peduncles few-flowered near the summit.	3. *C. hispidula.*



1. Cracca Virginiàna L. Cat-gut. Goat's Rue. (Fig. 2117.)

Cracca Virginiana L. Sp. Pl. 752. 1753.
Galega Virginiana L. Sp. Pl. Ed. 2, 1062. 1763.
Tephrosia Virginiana Pers. Syn. 2: 329. 1807.

Erect or ascending, more or less villous or silky-pubescent with whitish hairs, 1°–2° high. Roots long, fibrous, tough; leaves short-petioled; leaflets 7–25, oblong, linear-oblong or the terminal one oblanceolate, narrowed or cuneate at the base, rounded, mucronate or emarginate at the apex, 9″–12″ long, 2″–4″ wide; flowers yellowish-purple, 6″–9″ long, crowded in a terminal often compound nearly sessile raceme; pedicels 2″–4″ long; pod linear, densely pubescent, 1′–2′ long.

In dry sandy soil, southern New England, shore of Lake Erie, to Minnesota, south to Florida, Louisiana and northern Mexico. Called also Hoary Pea, Wild Sweet Pea. June–July.

Cracca Virginiàna holosericea (Nutt.) Vail, Bull. Torr. Club, **22**: 27. 1895.

Tephrosia holosericea Nutt. Journ. Acad. Phila. **7**: 105. 1834.

Densely woolly-pubescent; leaflets acutish. Illinois to Wisconsin, Louisiana and Arkansas.

2. Cracca spicàta (Walt.) Kuntze. Loosely-flowered Goat's Rue. (Fig. 2118.)

Galega spicata Walt. Fl. Car. 188. 1788.

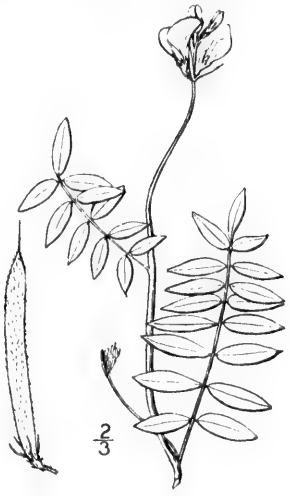
Tephrosia spicata T. & G. Fl. N. A. **1**: 296. 1838.

Cracca spicata Kuntze, Rev. Gen. Pl. 175. 1891.

Villous-pubescent with long brown hairs, decumbent or straggling, much branched, 1°–2° long. Leaves few and distant, short-petioled; leaflets 9–15, short-stalked, oval, oblanceolate or narrowly obovate, narrowed, cuneate or rounded at the base, obtuse and mucronate at the apex, 9″–15″ long, 3″–6″ wide; peduncles lateral and terminal, slender, 4′–10′ long; inflorescence interrupted, very loose, 2′–5′ long; flowers purplish, 6″–8″ long; pod linear, finely pubescent, about 2′ long, 2½″ wide.

In dry soil, Delaware to Florida, west to Alabama and Mississippi. June–Aug.

3. Cracca hispídula (Michx.) Kuntze. Few-flowered Goat's Rue. (Fig. 2119.)



Galega hispidula Michx. Fl. Bor. Am. **2**: 68. 1803.

Tephrosia hispidula Pers. Syn. **2**: 329. 1807.

Cracca hispidula Kuntze, Rev. Gen. Pl. 175. 1891.

More or less pubescent, procumbent or straggling, much branched, slender, 1°–2° long. Leaves petioled; leaflets 5–19, short-stalked, oval, oblong, oblanceolate or obovate, narrowed, rounded or cuneate at the base, obtuse, emarginate or acute at the apex; peduncles lateral or terminal, slender, 2′–4′ long; flowers red-purple, few, terminal, about 6″ long; pod linear, 1′–1½′ long, 2″ wide, minutely pubescent.

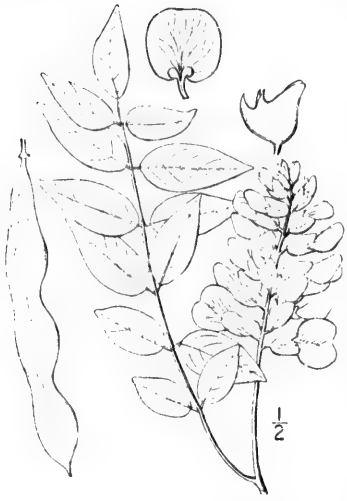
Dry sandy soil, Virginia to Florida, west to Alabama. May–Aug.

20. KRAÙNHIA Raf. Med. Rep. (II.) **5**: 352. 1808.

[WISTERIA Nutt. Gen. **2**: 125. 1818.]

High-climbing woody vines, with odd-pinnate leaves, and showy blue or purplish flowers in large terminal racemes. Calyx somewhat 2-lipped, the 2 upper teeth slightly shorter than the 3 lower. Standard large, reflexed, clawed, with 2 small appendages at the base of the blade; wings oblong, falcate, auriculate at the base; keel incurved, obtuse. Stamens diadelphous; anthers all alike. Ovary stalked; ovules ∞. Pod elongated, torulose, 2-valved, coriaceous, not septate between the seeds. [Named for Kraunh.]

Four known species, the following of southeastern North America, the others Asiatic.



1. Kraunhia frutéscens (L.) Greene. American Wisteria. (Fig. 2120.)

Glycine frutescens L. Sp. Pl. 753. 1753.
Wisteria speciosa Nutt. Gen. 2: 116. 1818.
Wisteria frutescens Poir. in Lam. Ill. 3: 674. 1823.
Kraunhia frutescens Greene, Pittonia, 2: 175. 1891.

Climbing over trees and bushes to a length of 30°–40° or more, forming a stem several inches in diameter. Leaves petioled; rachis and short stalks of the leaflets often pubescent; leaflets 9–15, ovate or ovate-lanceolate, somewhat acuminate but blunt at the apex, rounded at the base, entire, 1′–2′ long, glabrous and dark-green above, pale and sometimes slightly pubescent beneath; racemes dense, 2′–7′ long; pedicels 2″–3″ long; calyx finely pubescent; corolla lilac-purple, 6″–9″ long; auricles of the wings one short and one slender; pod linear, 2′–3′ long.

In low grounds, Virginia to Florida, west to Indiana, Kansas, and Louisiana. Called also Kidney-bean Tree. April–June.

21. ROBÍNIA L. Sp. Pl. 722. 1753.

Trees or shrubs, with odd-pinnate leaves, and axillary or terminal racemes of showy flowers. Stipules small, often spiny. Petioles slightly dilated at the base, enclosing the buds of the next year. Calyx-teeth short, broad, the 2 upper somewhat united. Standard large, reflexed, not appendaged; wings oblong, curved; keel curved, obtuse. Stamens diadelphous; anthers uniform, or the alternate ones smaller. Ovary stalked; ovules ∞. Pod flat, linear, not septate between the seeds, margined along the upper suture, 2-valved. [Name in honor of John and Vespasian Robin, who first cultivated the Locust-tree in Europe, 1550–1629.]

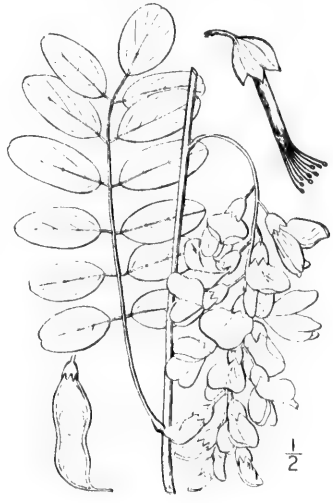
About 6 species, natives of North America and Mexico.

Twigs, petioles and pods glabrous; flowers white; a tree. 1. *R. Pseudacacia.*
Twigs and petioles glandular; pods hispid; flowers pinkish; a tree. 2. *R. viscosa.*
Twigs and petioles bristly; pods hispid; flowers pink or purple; a shrub. 3. *R. hispida.*

1. Robinia Pseudacàcia L. Locust-tree. False or Bastard Acacia. Silver-chain. (Fig. 2121.)

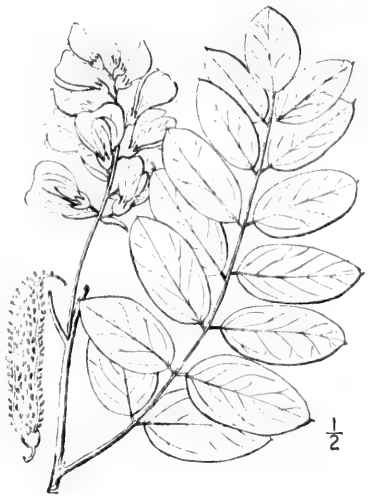
Robinia Pseudacacia L. Sp. Pl. 722. 1753.
Pseudacacia odorata Moench, Meth. 145. 1789.

A large tree with very rough bark, maximum height of about 80° and trunk diameter of 3½°, rarely shrubby. Twigs and foliage glabrous or very nearly so; stipules often spiny; leaflets 9–19, stalked, ovate or oval, mainly rounded at the base, obtuse or emarginate and mucronulate at the apex, entire, 1′–2′ long; stipels small, setaceous; racemes loose, drooping; pedicels slender, 3″–6″ long; flowers white, fragrant, 7″–10″ long, the standard yellowish at base; pod glabrous, 2′–4′ long, about 6″ wide, 4–7-seeded.



Monroe Co., Pa., south, especially along the western slopes of the mountains, to Georgia, west to Iowa and the Indian Territory. Extensively naturalized in the Middle and Eastern States and eastern Canada. Wood strong, very durable, greenish brown, the sapwood yellow; weight per cubic foot 46 lbs. Extensively used for posts, in ship-building, and especially for tree-nails. Called also Yellow or Black Locust. May–June.

2. Robinia viscòsa Vent. Clammy Locust. (Fig. 2122.)

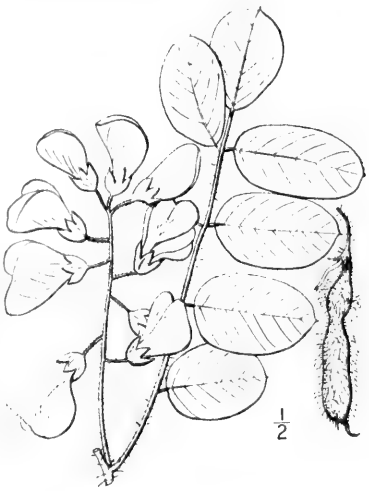


Robinia viscosa Vent. Hort. Cels, *pl. 4.* 1800.

A small tree, with rough bark, maximum height about 40° and trunk diameter 10′. Twigs and petioles glandular-pubescent; stipules short, sometimes spiny; leaflets 11–25, stalked, obtuse and mucronate at the apex, mostly rounded at the base, ovate or oval, nearly glabrous, 1′–2′ long, thicker than those of the preceding species; stipels small, subulate; racemes rather dense, often erect; pedicels 2″–4″ long; flowers pinkish, 9″–12″ long, not fragrant; pod 2′–4′ long, about 6″ wide, glandular-hispid.

Mountains of southwestern Virginia to Georgia. Occasionally escaped from cultivation in the Middle and Eastern States and in Canada. Wood brown, the sap-wood yellow; weight per cubic foot 50 lbs. June.

3. Robinia híspida L. Rose Acacia. Bristly or Moss Locust. (Fig. 2123.)



Robinia hispida L. Mant. 101. 1767.

A much-branched shrub, 3°–9° high. Twigs, petioles, pedicels and rachises of the leaves bristly; stipules very small, or none; leaflets 9–13, stalked, broadly ovate or oblong, entire, mainly obtuse or rounded at each end, mucronate, 1′–2′ long; stipels none or subulate; racemes loose; pedicels 3″–6″ long; flowers pink or purple, 8″–15″ long, not fragrant; pods linear, bristly-hispid.

Mountains of Virginia to Georgia. Often cultivated for ornament. May–June.

22. SÉSBAN Adans. Fam. Pl. 2: 327. 1763.

[SESBANIA Scop. Introd. 308. 1777.]

Herbs or shrubs, with evenly pinnate leaves, the leaflets numerous, entire, not stipellate, or the stipels minute. Flowers yellow, reddish, purplish or white, in axillary racemes, the slender pedicels with 2 deciduous bractlets under the calyx. Calyx campanulate, nearly equally 5-toothed. Standard broad, ovate or orbicular; wings oblong, falcate; keel blunt. Stamens diadelphous (9 and 1). Ovary mostly stipitate, many-ovuled; style glabrous; stigma small. Pod elongated-linear, wingless, compressed, partitioned between the oblong seeds. [Name Arabic.]

About 15 species, natives of warm and tropical regions, only the following one known in North America.

1. Sesban macrocàrpa Muhl. Long-podded Sesban. (Fig. 2124.)

Sesbania macrocarpa Muhl.; Ell. Bot. S. C. & Ga. 2: 221. 1821.

Annual, glabrous, widely branching, 4°–12° tall. Leaflets 10–35 pairs, oblong, obtuse, mucronate, thin, 1′ long or less, 2′′–3′′ wide, pale beneath; racemes shorter than the leaves, 1–5-flowered; calyx-teeth subulate, shorter than the tube; corolla yellowish, purple-spotted, the standard 8′′–10′′ long; pod 6′–12′ long, about 2′′ wide, somewhat curved, drooping, tipped with the subulate style.

In wet or moist soil, Missouri to Texas, east to South Carolina and Florida, south to Central America. Collected also in southern Pennsylvania. June–Sept.

23. ASTRÁGALUS L. Sp. Pl. 755. 1753.

Herbs, sometimes woody, mostly with odd-pinnate or sometimes simple leaves, and purple violet white or yellow flowers in spikes or racemes, or rarely umbellate or solitary. Stipules present. Calyx tubular, its teeth nearly equal. Petals clawed; standard erect, ovate or oblong; wings oblong; keel obtuse, about equalling the wings. Stamens diadelphous; anthers all alike. Ovary sessile or stipitate; ovules ∞. Pod sessile or stalked, dehiscent or indehiscent, 1–2-celled, very different in different species and affording the best characters in classification. [Greek name of some leguminous plant.]

About 1000 species, of wide geographic distribution, most abundant in northern Asia. In addition to the following, at least 175 others occur in the western and southern United States.

* **Pod 2-celled.**

Pod fleshy, thick-walled, indehiscent.
  Pod glabrous, globose, or oval.
    Corolla purple; pod pointed. 1. *A. crassicarpus.*
    Corolla yellowish-white; pod obtuse. 2. *A. Mexicanus.*
  Pod pubescent, ovoid or oblong.
    Pod ovoid, about 6′′ long, not wrinkled. 3. *A. Plattensis.*
    Pod oblong, curved, 1′ long or more, wrinkled. 4. *A. Tennesseensis.*
Pod dry, leathery, cartilaginous or papery, dehiscent.
  Plant densely villous-pubescent all over. 5. *A. mollissimus.*
  Plants glabrous, or grayish-pubescent.
    Flowers yellowish; pod terete, glabrous. 6 *A. Carolinianus.*
    Flowers purple; pod with a deep furrow, pubescent.
      Pod finely appressed-pubescent. 7. *A. adsurgens.*
      Pod densely villous with white hairs. 8. *A. Hypoglottis.*

* * **Pod 1-celled, but one or both sutures sometimes intruded.**

† Pod swollen.

Pod triangular or heart-shaped in section, membranous; flowers mostly yellowish-white.
  Pod heart-shaped in section; plant woolly-pubescent. 9. *A. Drummondii.*
  Pod triangular in section; plant appressed-pubescent. 10. *A. racemosus.*
Pod 2-grooved on the upper side; flowers purple. 11. *A. bisulcatus.*
Pod nearly circular, or 8-shaped, in section, mostly coriaceous.
  Leaflets narrowly linear, elongated, persistent; flowers yellow. 12. *A. pectinatus.*
  Leaflets oblong, lanceolate, oblanceolate, oval or linear, deciduous.
    Plants scapose, or short-stemmed, villous or silvery-pubescent.
      Plant gray-villous; flowers yellow. 13. *A. lotiflorus.*
      Plants silvery-pubescent; flowers blue, violet or purple.
        Pod nearly circular in section, straight. 14. *A. Missouriensis.*
        Pod 8-shaped in section, its summit curved. 15. *A. Shortianus.*
    Plants leafy-stemmed, appressed-pubescent or glabrate; flowers purple.
      Pod 3′′–6′′ long, wrinkled; flowers 3′′ long or less.
        Plant erect; leaflets obtuse, very narrow. 16. *A. gracilis.*
        Plant diffuse; leaflets emarginate, short-linear. 17. *A. microlobus.*
      Pod more than 6′′ long, smooth; flowers 6′′ long or more.
        Pod not grooved, puberulent. 18. *A. flexuosus.*
        Pod grooved on the lower side, glabrous. 19. *A. distortus.*

† † Pod flattened, membranous.

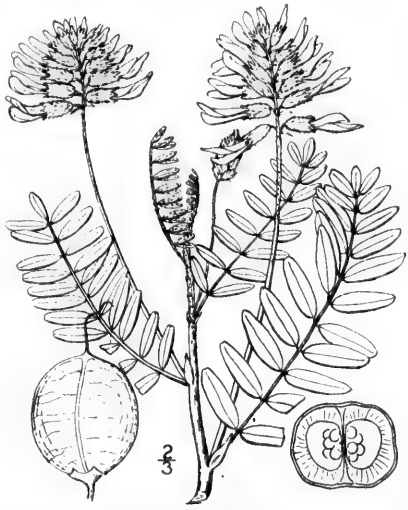
Pod sessile in the calyx, black-pubescent; flowers purple. 20. *A. elegans.*
Pod stalked, glabrous; flowers white to violet. 21. *A. aboriginorum.*
  pubescent, slightly grooved, 9′′ long; flowers white or purple. 22. *A. Robbinsii.*
  pubescent, deeply grooved on lower side, 6′′ long; flowers violet. 23. *A. alpinus.*

1. Astragalus crassicàrpus Nutt. Ground Plum. (Fig. 2125.)

Astragalus crassicarpus Nutt. Fraser's Cat. 1813.
Astragalus carnosus Pursh, Fl. Am. Sept. 740. In part. 1814.
Astragalus caryocarpus Ker, Bot. Reg. 2: *pl. 176.* 1816.

Appressed-pubescent, branching at the base, branches decumbent or ascending, 6′–15′ long, mostly simple. Stipules ovate, acute, 2″–3″ long; leaflets 15–25, oblong, elliptic or sometimes obovate, obtuse, narrowed at the base, 3″–6″ long, 1½″–2½″ wide; peduncles equalling or shorter than the leaves; flowers violet-purple, 8″–9″ long, in short racemes; pods sessile, thick, fleshy, completely 2-celled, indehiscent, glabrous, globose or oval, short-pointed, 8″–12″ in diameter.

Prairies, Minnesota to Manitoba and the Northwest Territory, south to Iowa, Colorado and Texas. Fruit edible, collected by prairie-dogs for their winter store. April–June.

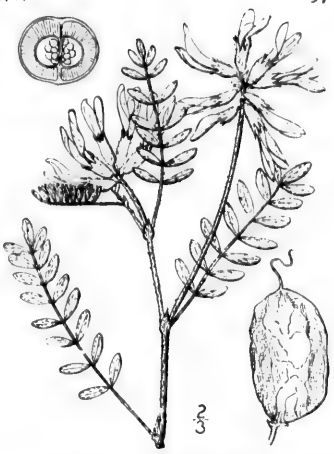


3. Astragalus Platténsis Nutt. Platte Milk Vetch. (Fig. 2127.)

Astragalus Plattensis Nutt.; T. & G. Fl. N. A. 1: 332. 1838.

Villous-pubescent with spreading hairs, prostrate or ascending, 6′–12′ high or long. Leaflets 13–29, oblong to obovate, obtuse at the apex, narrowed at the base, 4″–9″ long, about 2″ wide; stipules broad, ovate, pointed, 3″–4″ long; flowers yellowish-white or tipped with purple, about 9″ long, in short heads; pod sessile, ovoid, pointed, fleshy, indehiscent, 2-celled, smooth, loosely pubescent, nearly straight.

Prairies, Indiana to Minnesota and Nebraska, south to Alabama and Texas. May.

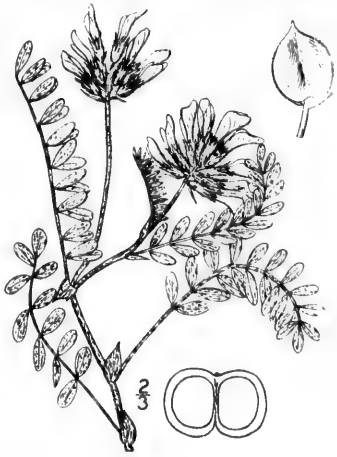


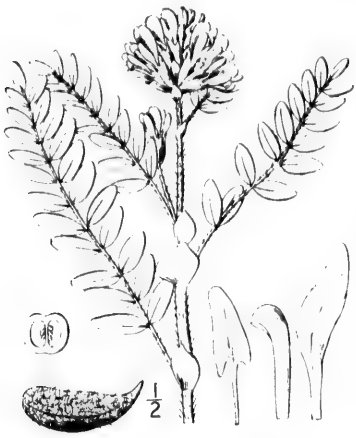
2. Astragalus Mexicànus A. DC. Larger Ground Plum. (Fig. 2126.)

Astragalus Mexicanus A. DC. Pl. Rar. Jard. Gen. 4: 16. 1826.
Astragalus trichocalyx Nutt.; T. & G. Fl. N. A. 1: 332. 1838.

Similar to the preceding species, but less pubescent and with the hairs somewhat spreading. Leaflets 17–33, oblong to obovate, obtuse or emarginate at the apex, narrowed at the base; flowers yellowish-white, or purplish at the tip, 9″–12″ long, in short racemes; pod sessile, thick, fleshy, indehiscent, glabrous, globose, not pointed, 1′–1¼′ in diameter.

Prairies, Illinois to Nebraska, south to Arkansas and Texas. Fruit edible. May.





4. Astragalus Tennesseénsis A. Gray. Tennessee Milk Vetch. (Fig. 2128.)

Astragalus Tennesseensis A. Gray; Chapm. Fl. S. States, 98. 1860.
Astragalus Plattensis var. *Tennesseensis* A. Gray, Proc. Am. Acad. **6**: 193. 1864.

Stems erect or ascending from a deep root; plant villous with long whitish hairs. Leaflets 15–31, oblong, or linear-oblong, obtuse, or emarginate, nearly glabrous above, 6″–10″ long, 2″–4″ wide; stipules lanceolate, oval, or ovate-lanceolate; peduncles about equalling the leaves; racemes short, several–many-flowered; flowers about 10″ long; pod oblong, 2-celled, fleshy, 1′ long or rather more, strongly wrinkled, at least when dry, its summit strongly curved.

On hillsides, Tennessee to Alabama and Missouri. March–May.

5. Astragalus mollíssimus Torr. Woolly Loco-weed or Crazy-weed. (Fig. 2129.)

Phaca villosa James, Trans. Am. Phil. Soc. (II.) **2**: 186. 1825. Not Nutt. 1818.
Astragalus mollissimus Torr. Ann. Lyc. **2**: 178. 1826.

Decumbent or ascending, stout, bushy, densely villous-pubescent, 1°–2° high. Stem very short; stipules membranous, ovate, pointed, 3″–5″ long, adnate to the petiole; leaflets 19–27, oval, obtuse, but pointed at the apex, narrowed or rounded at the base, 4″–6″ long, 2″–3″ wide; peduncles equalling or exceeding the leaves; flowers violet-purple, 8″–12″ long, in dense spikes; pod oblong, dry, cartilaginous, glabrous, dehiscent into 2 valves, somewhat compressed, sessile, 2-celled, 5″–10″ long, about 3″ thick, furrowed at both sutures, slightly curved at maturity.

Prairies, Nebraska and Colorado, south to Texas and New Mexico. June. The popular name of the plant is from its poisonous effects on cattle.

6. Astragalus Caroliniànus L. Carolina Milk Vetch. (Fig. 2130.)

Astragalus Carolinianus L. Sp. Pl. 757. 1753.
Astragalus Canadensis L. Sp. Pl. 757. 1753.

Glabrous or slightly pubescent, erect or ascending, branched, 1°–4° high. Stipules membranous, broadly lanceolate, acuminate, 2″–4″ long; leaflets 15–31, elliptic or oval, obtuse or slightly emarginate at the apex, rounded at the base, 1′–2′ long, 3″–9″ wide; peduncles longer than the leaves, or shorter; flowers greenish yellow, 6″–8″ long in dense thick spikes; pod sessile, 2-celled, coriaceous, dehiscent, glabrous, erect, terete, or sometimes slightly furrowed at the dorsal suture, pointed, nearly straight, 5″–8″ long.

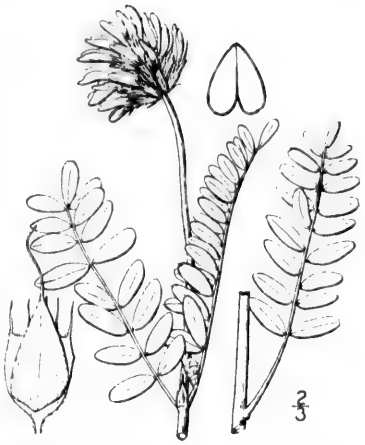
Along streams, Hudson Bay and Quebec to the Rocky Mountains, south to western New York, Georgia, Louisiana and Colorado. July–Aug.

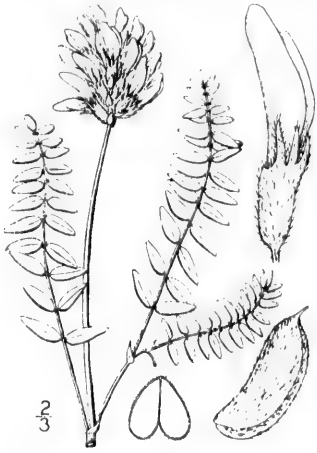
7. Astragalus adsúrgens Pall. Ascending Milk Vetch. (Fig. 2131.)

Astragalus adsurgens Pall. Astrag. 40. *pl. 31.* 1800.

Minutely cinereous-pubescent or glabrate, ascending or decumbent, 4′–18′ long, simple or branched at the base. Stipules membranous, ovate, acuminate, 3″–5″ long; leaflets 15–25, oval to linear-oblong, obtuse and sometimes emarginate at the apex, narrowed at the base, 8″–12″ long; peduncles exceeding the leaves; flowers purplish, 6″–8″ long, in dense short spikes; pod sessile, 2-celled, oblong, pointed, coriaceous, finely pubescent, erect, dehiscent, cordate-triangular in section, deeply furrowed on the back, 4″–6″ long.

Prairies, Minnesota to the Northwest Territory and British Columbia, south to Kansas and Colorado. Also in northern Asia. June–July.



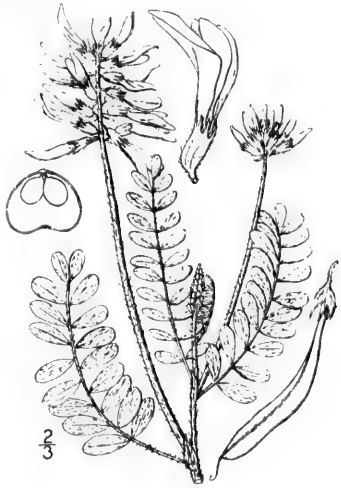


8. Astragalus Hypoglóttis L. Purple Milk Vetch or Cock's-head. (Fig. 2132.)

Astragalus Hypoglottis L. Mant. 2: 274. 1771.

Pubescent or glabrate, decumbent or ascending, slender, branched at the base, 6′–24′ long. Stipules ovate-lanceolate, acute, 2″–3″ long; leaflets 17–25, oblong or elliptic, obtusish and generally emarginate at the apex, rounded at the base, 3″–7″ long; flowers violet-purple, 6″–10″ long, in dense heads; pods membranous, sessile, 2-celled, dehiscent, densely villous with white hairs, ovoid-oblong, deeply furrowed on the back, 4″–5″ long.

Kansas to Minnesota, north to Hudson Bay, west to Nevada and Alaska. Also in northern Europe and Asia. May–Aug.



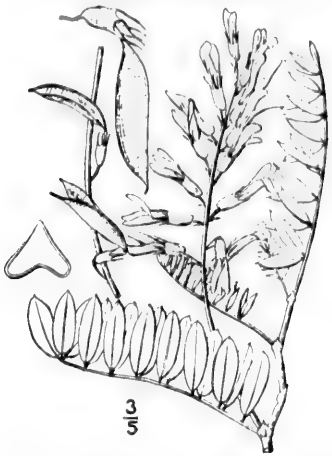
9. Astragalus Drummóndii Dougl. Drummond's Milk Vetch. (Fig. 2133.)

Astragalus Drummondii Dougl.; Hook. Fl. Bor. Am. 1: 153. 1833.

Loosely woolly-pubescent, erect, 1°–2° high, rather stout, growing in clumps. Stipules ovate, long-acuminate, 3″–5″ long; leaflets 19–33, oblong or sometimes oblanceolate, obtuse at the apex, narrowed at the base, 5″–10″ long; flowers yellowish white or the keel purplish tinged, 8″–9″ long, in loose spikes; peduncles equalling or exceeding the leaves; pod 1-celled, the dorsal suture somewhat intruded, distinctly stipitate, cartilaginous, linear, pendent, glabrous, grooved, about 2′ long; calyx somewhat enlarged at the base, dark-pubescent above.

Prairies, Nebraska to Manitoba, Wyoming and the Northwest Territory. June–July.

10. Astragalus racemòsus Pursh. Racemose Milk Vetch. (Fig. 2134.)

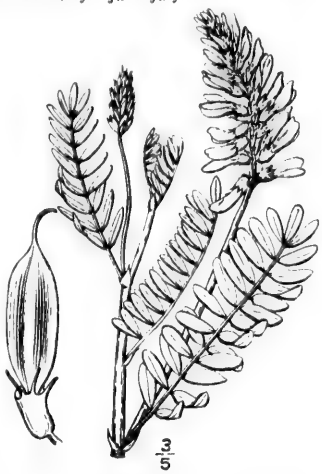


Astragalus racemosus Pursh, Fl. Am. Sept. 740. 1814.

Erect or ascending, finely pubescent, branched at the base; stem somewhat zigzag, 1°–2° high. Stipules ovate-lanceolate, membranous, 2″–3″ long; leaflets 17–21, elliptic or linear-oblong, acutish or mucronate, 10″–15″ long; peduncles equalling or exceeding the leaves; flowers yellowish-white, 8″–9″ long, in loose spike-like racemes; pedicels 1″–2″ long; pods linear-oblong, imperfectly 2-celled by the intrusion of the dorsal suture, triangular in section, acute at each end, glabrous, stipitate, broadly sulcate, pendent, about 1′ long.

Prairies, Nebraska and Colorado, north to the Northwest Territory. June–July.

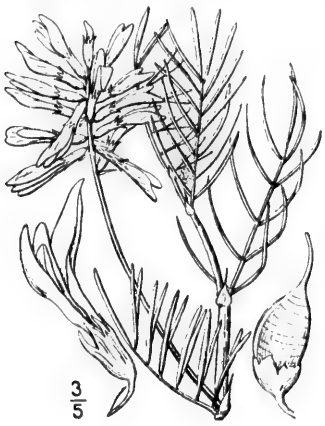
11. Astragalus bisulcàtus (Hook.) A. Gray. Two-grooved Milk Vetch. (Fig. 2135.)



Phaca bisulcata Hook. Fl. Bor. Am. 1: 145. 1833.
Astragalus bisulcatus A. Gray, Pac. R. R. Rep. 12: Part 2, 42. *pl.* 1. 1860.

Rather stout, erect, nearly simple, 1°–3° high. Stipules membranous, ovate-lanceolate, acute, 4″–6″ long; leaflets 17–27, oval or oblong, obtuse at the apex, narrowed at the base, 8″–12″ long; flowers deep purple, 7″–8″ long, in elongated narrow racemes; peduncles longer than the leaves; pod 1-celled, linear, stipitate, deflexed, pointed, glabrous at maturity, membranous, with 2 deep furrows on the upper side, 6″–10″ long.

Nebraska and Colorado to Montana and the Northwest Territory. June–Aug.



12. Astragalus pectinàtus (Hook.) Dougl. Narrow-leaved Milk Vetch. (Fig. 2136.)

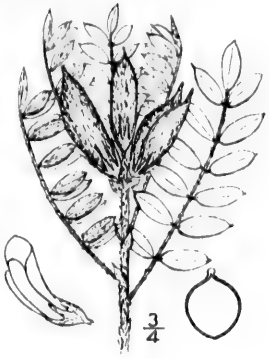
Phaca pectinata Hook. Fl. Bor. Am. 1: 141. *pl.* 54. 1830.
Astragalus pectinatus Dougl.; Hook. Fl. Bor. Am. 1: 142. As synonym. 1830.

Ascending, much branched at the base or also above, 1°–2° high, finely canescent or glabrate. Stipules membranous, ovate-lanceolate, acute or acuminate, 4″–6″ long; leaflets 11–21, very narrowly linear, acute, ½′–3′ long; peduncles shorter than or exceeding the leaves; flowers yellow, 8″–12″ long, in loose spikes or spike-like racemes; standard much longer than the wings and keel; pod nearly terete, 1-celled, sessile, oblong, pointed, coriaceous, glabrous, not furrowed, keeled along the upper suture, 6″–8″ long.

Prairies, Nebraska and Colorado to the Northwest Territory. June–Aug.

13. Astragalus lotiflòrus Hook. Low Milk Vetch. (Fig. 2137.)

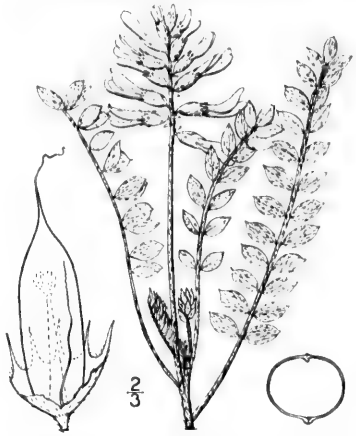
Astragalus lotiflorus Hook. Fl. Bor. Am. 1: 152. 1833.
Phaca lotiflora T. & G. Fl. N. A. 1: 349. 1838.
Astragalus elatiocarpus Sheld. Bull. Geol. Nat. Hist. Surv. Minn. 9: 20. 1894.



Villous-pubescent with white hairs, branched from the base, nearly acaulescent, or with stems 1′–3′ long. Stipules ovate, acuminate, 1½″–2″ long; leaflets 7–15, oval or oblong, obtuse and sometimes mucronulate at the apex, narrowed at the base, 5″–8″ long; flowers yellow, 4″–6″ long, in rather dense short spikes; peduncles shorter than or equalling the leaves, sometimes very short; pod 1-celled, sessile, villous-pubescent, ovoid-oblong, coriaceous, somewhat inflated, pointed, dehiscent, keeled along the straight dorsal suture.

Prairies, Manitoba to Nebraska and Texas, west to Colorado and the Northwest Territory. June–July.

14. Astragalus Missouriénsis Nutt. Missouri Milk Vetch. (Fig. 2138.)



Astragalus melanocarpus Nutt. Fraser Cat. Name only. 1813.

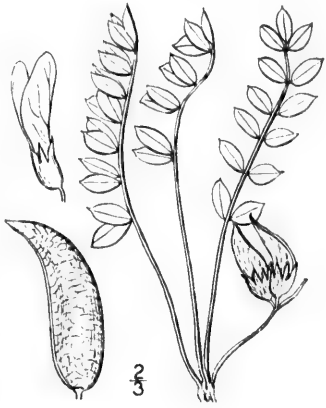
Astragalus Missouriensis Nutt. Gen. 2: 99. 1818.

Densely silky-canescent all over, tufted, branching from the base, 2′–5′ long. Stipules ovate-lanceolate, acute, 2″–4″ long, leaflets 7–21, elliptic or obovate, obtuse but sometimes mucronate at the apex, narrowed or rounded at the base, 3″–5″ long; flowers few, violet-purple, 5″–9″ long in loose heads or short spikes; pod 1-celled, sessile, acute, oblong, pubescent, dehiscent, coriaceous, circular in section, slightly keeled along the ventral suture, transversely wrinkled, about 1′ long.

Prairies, Nebraska to the Northwest Territory, south to New Mexico. May–July.

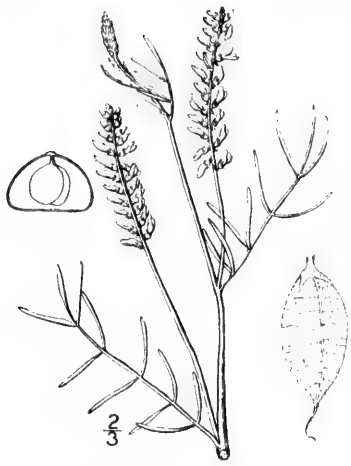
15. Astragalus Shortiànus Nutt. Short's Milk Vetch. (Fig. 2139.)

Astragalus Shortianus Nutt.; T. & G. Fl. N. A. 1: 331. 1838.



Silvery canescent, nearly acaulescent, somewhat branched from the base. Stipules ovate, acutish, about 2″ long; leaflets 9–15, elliptic or obovate, acutish at the apex, narrowed or rounded at the base, 5″–9″ long; flowers blue or violet, 7″–9″ long; peduncles commonly shorter than the leaves; pod 1-celled, sessile, coriaceous, S-shaped in section, dehiscent at maturity, lanceolate-ovoid, puberulent, transversely wrinkled, strongly curved and beaked at the summit, 1′–1½′ long.

Prairies, Nebraska and Colorado, south to New Mexico. May–July.



16. Astragalus grácilis Nutt. Slender Milk Vetch. (Fig. 2140.)

Dalea parviflora Pursh, Fl. Am. Sept. 474. 1814. Not *A. parviflorus* Lam. 1783.

Astragalus gracilis Nutt. Gen. 2: 100. 1818.

Slender, erect, finely pubescent, 1°–2° high, simple or nearly so. Stipules ovate, acute or acuminate, 2″–3″ long; leaflets 11–21, narrowly linear, distant, obtuse at the apex, 9″–12″ long, scarcely 1″ wide; flowers purple, 3″–4″ long, in narrow elongated spike-like racemes; pedicels 1″ long or less; pods 1-celled, sessile in the calyx, pendent, straight, coriaceous, ellipsoid, finely appressed-pubescent with white hairs, especially on the ventral side, transversely veined, 2″–3″ long.

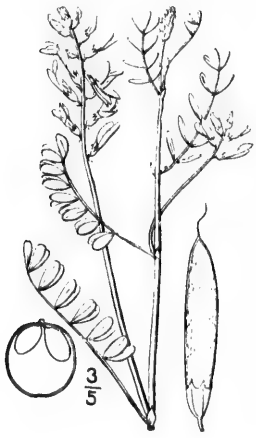
Prairies, Minnesota to Missouri, Colorado and Wyoming. May–June.

17. Astragalus micrólobus A. Gray. Notched-leaved Milk Vetch. (Fig. 2141.)

Astragalus microlobus A. Gray, Proc. Am. Acad. 6: 203. 1864.

Diffuse or ascending, finely canescent, about 1° high. Stipules ovate-lanceolate, acute, 1½″–2″ long; leaflets 7–17, linear or linear-oblong, truncate or emarginate at the apex, narrowed at the base, 4″–7″ long; flowers purple, 3″–4″ long, in loose spikes; peduncles often longer than the leaves; pod sessile, 1-celled, coriaceous, ovoid or ellipsoid, reflexed, finely pubescent, transversely veined, flattened on the back, keeled along the ventral suture, 2″–3″ long.

Prairies, Nebraska to Missouri and Colorado. Similar to *A. gracilis*. Summer.



18. Astragalus flexuòsus (Hook.) Dougl. Flexile Milk Vetch. (Fig. 2142.)

Phaca elongata Hook. Fl. Bor. Am. 1: 140. 1830. Not *Astragalus elongatus* Willd. 1803.

Phaca flexuosa Hook. Fl. Bor. Am. 1: 141. 1830.

Astragalus flexuosus Dougl.; Hook. Fl. Bor. Am. 1: 140. 1830.

Erect or ascending, finely pubescent, branching from the base, 1°–1½° high. Stipules ovate or ovate-lanceolate, 2″–3″ long; leaflets 9–21, linear, oblong or oblanceolate, obtuse or emarginate at the apex, narrowed or cuneate at the base, 3″–6″ long; peduncles exceeding the leaves; flowers purple or purplish, 4″–5″ long; pod 1-celled, sessile, cylindric, linear or linear-oblong, puberulent, dehiscent, pointed, 8″–12″ long.

Prairies, Nebraska to Colorado, north to the Northwest Territory. June–Aug.

19. Astragalus distórtus T. & G. Bent Milk Vetch. (Fig. 2143.)

Astragalus distortus T. & G. Fl. N. A. 1: 333. 1838.

Sparingly pubescent or glabrate, diffuse or ascending, much branched from the base, stems 8′–15′ long. Leaflets 11–25, obovate or oval, emarginate or rounded at the apex, narrowed at the base, 2″–5″ long; flowers purple, 4″–6″ long, in loose short spikes; pod sessile in the calyx, 1-celled, slightly inflated, linear-oblong, coriaceous, strongly curved, glabrous, grooved on the under side, 1′–1½′ long.

In dry soil, Illinois to Iowa, south to West Virginia, Mississippi and Texas. March–July.

20. Astragalus élegans (Hook.) Britton. Pretty Milk Vetch. (Fig. 2144.)

Phaca elegans Hook. Fl. Bor. Am. 1: 144. 1830.
Astragalus oroboides var. *Americana* A. Gray, Proc. Am. Acad. 6: 205. 1864.
Phaca parviflora Nutt.; T. & G. Fl. N. A. 1: 348. 1838.

Glabrous or nearly so, erect or ascending, slender, somewhat branched, 10′–20′ high. Stipules ovate, acute, about 2″ long; flowers purple, 3″–4″ long, in elongated spike-like racemes; leaflets 9–17, oblong or linear-oblong, 8″–10″ long; pedicels at length 1″ long; pod sessile, ellipsoid, 1-celled, pendent, slightly inflated, obtuse at each end, apiculate, black-pubescent all over, 2″–3″ long.

Quebec, Labrador, the Saskatchewan region and in the higher and northern Rocky Mountains. June–Aug.

21. Astragalus aboriginòrum Richards. Indian Milk Vetch. (Fig. 2145.)

Astragalus aboriginorum Richards. App. Frank. Journ. 28. 1823.

Phaca aborigina Hook. Fl. Bor. Am. 1: 143. *pl. 56.* 1830.

Finely canescent or glabrate, erect, somewhat branched, 8′–15′ high. Stipules ovate, acute, membranous or foliaceous, 2″–3″ long; leaflets 9–13, linear or oblong, obtuse or acute, 6″–10″ long; flowers white, tinged with violet, 4″–5″ long, in rather loose racemes; peduncles longer than the leaves; pod slightly inflated, compressed, oval in section, 1-celled, glabrous, half-elliptic, long-stipitate, acute at each end, slightly sulcate, the dorsal suture slightly intruded; calyx blackish-pubescent, its teeth subulate.

Manitoba and the Northwest Territory, south to Colorado. Root long and yellow, "collected by the Cree and Stone Indians in the spring as an article of food" (Richardson). May–June.

22. **Astragalus Robbinsii** (Oakes) A. Gray. Robbins' Milk Vetch. (Fig. 2146.)

Phaca Robbinsii Oakes, Hovey's Mag. Hort. 7: 179. 1841.
Astragalus Robbinsii A. Gray, Man. Ed. 2, 98. 1856.
Astragalus Robbinsii Jesupi Eggleston & Sheldon, Bull. Geol. Nat. Hist. Surv. Minn. 9: 155. 1894.

Glabrous or nearly so, erect, slender, branched at the base, 9′–18′ high. Stipules ovate-oblong, membranous, 2″–3″ long; leaflets 9–25, oblong, obtuse or slightly emarginate at the apex, narrowed or rounded at the base, 4″–8″ long; flowers white or purple, 3″–5″ long in loose short or elongated racemes; pedicels 1″–2″ long; pod much flattened, 1-celled, oblong, short-stipitate, rather abruptly pointed at each end, membranous, finely blackish-pubescent, dehiscent, nearly straight, not furrowed, 9″–12″ long.

In rocky places, Vermont and New Hampshire. June–July.

23. **Astragalus alpinus** L. Alpine Milk Vetch. (Fig. 2147.)

Astragalus alpinus L. Sp. Pl. 760. 1753.
Phaca astragalina DC. Astrag. 64. 1803.

Ascending or decumbent, branched from the base 6′–15′ high, slightly pubescent, or glabrous. Stipules ovate, foliaceous, 2″–3″ long; leaflets 13–25, oval or elliptic, obtuse or retuse, narrowed or rounded at the base, 3″–6″ long; flowers violet, the keel commonly darker, in short racemes; peduncles mostly exceeding the leaves; pod 1-celled, somewhat flattened, membranous, stipitate, pendent, dehiscent; rather densely black-pubescent, oblong, acute, somewhat inflated, about 6″ long, deeply furrowed on the under side; calyx dark-pubescent.

On rocks, northern New England to Newfoundland and Labrador, west to Alaska and British Columbia, south in the Rocky Mountains to Colorado. Also in northern Europe and Asia. June.

24. **PHÀCA** L. Sp. Pl. 755. 1753.

Perennial herbs, similar to *Astragalus*, mostly with pinnate leaves, and racemed or spicate purplish or purple flowers. Pod much inflated, membranous in texture, strictly 1-celled, neither of the sutures intruded. [Greek, Lentils.]

A large genus, mainly of the north temperate zone. Besides the following, numerous other species occur in the western parts of North America.

Leaflets 7–21, oblong, elliptic or ovate.
- Pod stalked; flowers slender-pedicelled. 1. *P. Americana.*
- Pod sessile; flowers short-pedicelled. 2. *P. neglecta.*

Leaflet only 1, or sometimes 3–5, very narrowly linear. 3. *P. longifolia.*

1. **Phaca Americàna** (Hook.) Rydberg. Arctic Milk Vetch. (Fig. 2148.)

Phaca frigida var. *Americana* Hook. Fl. Bor. Am. 1: 140. 1830.
Astragalus frigidus var. *Americanus* S. Wats. Bibl. Index, 1: 193. 1878.

Erect, nearly simple, glabrous, 1°–2° high. Stipules foliaceous, ovate-oblong, 2″–6″ long; leaflets 7–17, oval or ovate-lanceolate, 9″–18″ long; peduncles generally exceeding the leaves; flowers white, 8″–9″ long, in loose racemes; pedicels filiform, ½′ long in fruit; pod 1-celled, stipitate, inflated, membranous, 10″–12″ long, acute at each end, oblong, dehiscent at maturity, glabrous, shining.

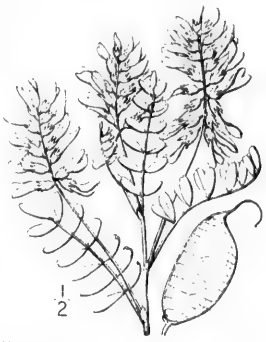
In wet rocky places, Quebec and arctic America to British Columbia and Alaska, south in the Rocky Mountains to Colorado. June–July.

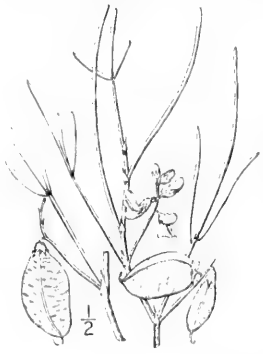
2. Phaca neglécta T. & G. Cooper's Milk Vetch. (Fig. 2149.)

Phaca neglecta T. & G. Fl. N. A. 1: 344. 1838.
Astragalus Cooperi A. Gray, Man. Ed. 2, 98. 1856.

Glabrous or nearly so, erect, 1°–2° high. Stipules ovate, acute, 1″–2″ long; leaflets 9–21, thin, oblong or elliptic, often minutely pubescent beneath, 8″–12″ long, obtuse or emarginate at the apex, narrowed at the base; peduncles shorter than or equalling the leaves; flowers white, 5″–7″ long, in rather loose spikes; calyx pubescent with blackish hairs, its teeth subulate; pod 1-celled, sessile, the ventral suture somewhat intruded, inflated, coriaceous, ovoid, acute, glabrous, slightly furrowed along both sutures, 6″–10″ long, 5″–6″ thick.

On banks and shores, Quebec to Niagara, west to Minnesota and Iowa. June–July.





3. Phaca longifòlia (Pursh) Nutt. Long-leaved Milk Vetch. (Fig. 2150.)

Psoralea longifolia Pursh, Fl. Am. Sept. 741. 1814.
Phaca longifolia Nutt.; T. & G. Fl. N. A. 1: 346. 1838.
Astragalus pictus var. *filifolius* A. Gray, Proc. Am. Acad. 6: 215. 1864.

Erect, very slender, branching, finely canescent, 6′–18′ high. Stipules subulate, rigid, those of the lower part of the stem connate; leaflet usually 1, narrowly linear, nearly terete, 1′–4′ long, ½″–1″ wide, sometimes 3 or 5; flowers few, pink, 3″–5″ long, in short loose racemes; peduncles much shorter than the leaves; pod 1-celled, short-stalked, much-inflated, membranous, spotted, glabrous, ovoid, short-pointed, not furrowed, about 1′ long, ½′ thick.

In sandy soil, Nebraska to New Mexico. Leaves persistent. May–June.

25. HOMÁLOBUS Nutt.; T. & G. Fl. N. A. 1: 352. 1838.

Perennial herbs, with pinnate simple or pinnately 3–5-foliolate leaves, and racemose mostly small flowers, the peduncles short, or elongated. Keel of the corolla obtuse. Pod flat, glabrous or pubescent, completely 1-celled, few-several-seeded, the sutures both prominent externally. [Greek, regular-lobes.]

Besides the following species, some 30 others occur in western North America.

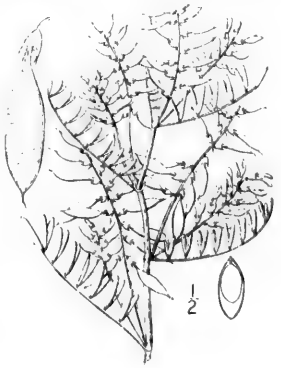
Plants leafy-stemmed.
Leaves pinnate; leaflets 11–23, thin. 1. *H. tenellus.*
Leaves pinnate; leaflets 3–7, rigid, very narrow, spiny. 2. *H. montanus.*
Plant scapose; leaves simple, or pinnately 3–5-foliolate, the leaflets very narrow. 3. *H. caespitosus.*

1. Homalobus tenéllus (Pursh) Britton. Loose-flowered Milk Vetch. (Fig. 2151.)

Astragalus tenellus Pursh, Fl. Am. Sept. 473. 1814.
Erium multiflorum Pursh, Fl. Am. Sept. 739. 1814.
Homalobus multiflorus T. & G. Fl. N. A. 1: 351. 1838.
A. multiflorus A. Gray, Proc. Am. Acad. 6: 226. 1864.

Ascending or diffuse, slender, branched, finely pubescent, or glabrate, 10′–18′ high. Stipules broadly ovate, 1½″–3″ long, acute or obtuse, the upper ones connate; leaflets 11–23, thin, oblong, linear-oblong or oblanceolate, obtuse at the apex, narrowed at the base, 6″–10″ long; flowers yellowish-white, 3″–4″ long, in loose spike-like racemes; pod stalked, straight, oblong, acute at each end, papery, glabrous, 6″–8″ long, 2″ wide.

Dry soil, Nebraska and Colorado to California, north to the Northwest Territory and British Columbia. May–Aug.



2. Homalobus montànus (Nutt.) Britton. Prickly Milk Vetch. (Fig. 2152.)

Kentrophyta montana Nutt.; T. & G. Fl. N. A. 1: 353. 1838.
Kentrophyta viridis Nutt.; T. & G. Fl. N. A. 1: 353. 1838.
Astragalus Kentrophyta A. Gray, Proc. Acad. Phil. 1863: 60. 1863.

Densely tufted, intricately branched, 2′–10′ high, finely canescent. Stipules linear-lanceolate, spiny-tipped, 2″–5″ long; leaflets 3–7, linear, rigid, spiny, widely spreading, 3″–6″ long, ¼″ wide; flowers 1–4 together in the axils, nearly sessile, yellowish-white or bluish-tinged, 2″–3″ long; pod sessile or very short-stalked, 1–3-seeded, ovoid-oblong, acute, coriaceous, dehiscent, pubescent, 3″–4″ long.

In dry, rocky places, Nebraska to New Mexico, Nevada and the Northwest Territory. June–Sept.

3. Homalobus caespitòsus Nutt. Tufted Milk Vetch. (Fig. 2153.)

Homalobus caespitosus Nutt.; T. & G. Fl. N. A. 1: 352. 1838.
Astragalus caespitosus A. Gray, Proc. Am. Acad. 6: 230. 1864.

Silvery-canescent, much tufted from a deep root, 3′–6′ high. Stipules scarious, much imbricated, lanceolate, acuminate, 4″–6″ long; leaves simple, spatulate-linear, acute, 1′–2′ long, or some of them 3–5-foliolate, with oblong-linear leaflets; peduncles scapiform, exceeding or equalling the leaves; flowers purple, 4″–5″ long, in heads or short spike-like racemes; pod erect, sessile, few-seeded, oblong, acute, coriaceous, slightly curved, pubescent, 4″–5″ long; calyx-teeth subulate.

In dry rocky soil, Nebraska and Colorado, north to the Northwest Territory. May–July.

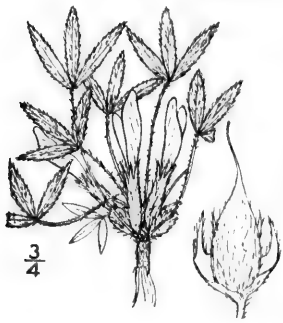
26. ORÓPHACA Britton.

Perennial, silvery or villous-pubescent low tufted herbs, with branched woody caudices, deep roots, membranous scarious stipules, sheathing and united below, and digitately 3-foliolate (rarely 5-foliolate) leaves, resembling those of Lupines. Flowers few, capitate or racemose, the clusters sessile or peduncled. Keel of the corolla blunt. Pod coriaceous, completely 1-celled, ovoid or oval, few-seeded, villous, partly or wholly enclosed by the calyx. [Greek, mountain vetch.]

Three known species, the following, and one in Colorado and Wyoming.

Flowers yellowish, 1–3 together in the axils. 1. *O. caespitosa.*
Flowers blue-purple, in peduncled racemes. 2. *O. sericea.*

1. Orophaca caespitòsa (Nutt.) Britton. Sessile-flowered Milk Vetch. (Fig. 2154.)



Astragalus triphyllus Pursh, Fl. Am. Sept. 740. 1814. Not Pall. 1800.
Phaca caespitosa Nutt. Gen. 2: 98. 1818.
Phaca argophylla Nutt.; T. & G. Fl. N. A. 1: 342. 1838.
A. hyalinus M. E. Jones, Proc. Cal. Acad. (II.) 648. 1895.

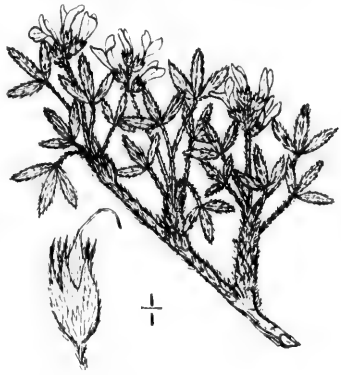
Silvery-canescent, densely tufted from a deep root, 2′–4′ high. Stipules scarious, imbricated, glabrous, ovate-lanceolate, 3″–4″ long; leaves digitately 3–5-foliolate, slender-petioled; leaflets oblong or oblanceolate, acute or obtusish at the apex, narrowed or cuneate at the base, 6″–8″ long; flowers yellowish, 6″–8″ long, sessile in the axils of the leaves; pod 1-celled, sessile, ovoid, acute or acuminate, coriaceous, dehiscent, villous-pubescent, enclosed by the calyx, 2″–3″ long.

Prairies, Nebraska and South Dakota to Montana and the Northwest Territory. May–July.

2. Orophaca sericea (Nutt.) Britton. Hoary Milk Vetch. (Fig. 2155.)

Phaca sericea Nutt.; T. & G. Fl. N. A. 1: 343. 1838.

Astragalus sericoleucus A. Gray, Am. Journ. Sci. (II.) 33: 410. 1862.



Villous-pubescent, densely tufted, and spreading on the ground from a deep root, the stems 3′–4′ long. Leaves short-petioled, 3-foliolate; leaflets oblong or oblanceolate, acute or obtusish at the apex, narrowed or cuneate at the base, 2″–5″ long; peduncles slender, 2–6-flowered, equalling or exceeding the leaves; flowers bluish-purple, about 3″ long; pod 1-celled, sessile, ovoid-oblong, coriaceous, acute, villous-pubescent, about 3″ long, partly enclosed by the calyx.

In dry, sandy or rocky places, Nebraska and Colorado. May–July.

27. SPIÈSIA Neck. Elem. 3: 13. 1790.

[OXYTROPIS DC. Astrag. 19. 1802.]

Herbs, sometimes shrubby, and mostly acaulescent, with odd-pinnate leaves, and racemose or spicate flowers. Calyx-teeth nearly equal. Petals clawed; standard erect, ovate or oblong; wings oblong; keel erect, shorter than or equalling the wings, its apex mucronate, acuminate or appendaged; stamens diadelphous; anthers all alike; style filiform. Pod sessile or stipitate, 2-valved, 1-celled, or more or less 2-celled by the intrusion of the ventral suture. [In honor of Johann Karl Spies, a German botanist.]

About 120 species, natives of the north temperate zone. In addition to the following, some 11 others occur in the western and northwestern parts of North America.

Leaves simply pinnate.
- Plants 1′–4′ high; heads few-flowered.
  - Pod membranous, pubescent, much inflated, 1-celled. — 1. *S. inflata.*
  - Pod coriaceous, ovoid, little inflated, pubescent, partly 2-celled.
    - Calyx gray-pubescent; leaflets 7–9, oblong. — 2. *S. multiceps.*
    - Calyx dark-pubescent; leaflets 7–21, linear. — 3. *S. arctica.*
- Plants 6′–18′ high; heads or spike-like racemes many-flowered.
  - Sparingly pubescent; flowers 8″–9″ long; pods papery. — 4. *S. campestris.*
  - Silky-pubescent; flowers 9″–15″ long; pods coriaceous. — 5. *S. Lamberti.*

Leaves pinnate, the leaflets verticillate.
- Pod scarcely longer than the calyx, its tip spreading. — 6. *S. splendens.*
- Pod 2–3 times as long as the calyx, its tip erect. — 7. *S. Belli.*

1. Spiesia inflàta (Hook.) Britton. Inflated Oxytrope. (Fig. 2156.)

Oxytropis arctica var. *inflata* Hook. Fl. Bor. Am. 1: 146. 1833.

Oxytropis podocarpa A. Gray, Proc. Am. Acad. 6: 234. 1864.

Spiesia inflata Britton, Mem. Torr. Club, 5: 201. 1894.

Acaulescent or nearly so, more or less villous-pubescent, much tufted, 1′–4′ high. Stipules membranous, imbricated, adnate to the petiole, lanceolate, about 2″ long; leaves pinnate; leaflets 9–21, linear, 2″–4″ long, about ½″ wide, obtuse or obtusish; peduncles 1–2-flowered, scarcely exceeding the leaves; flowers violet, 7″–8″ long; calyx densely dark-pubescent; pod membranous, much inflated, 1-celled, ovoid, pubescent, short-stalked or sessile in the calyx, about 9″ long, pointed; ventral-suture slightly intruded.

Arctic and alpine; Labrador and arctic America, south in the Rocky Mountains to Colorado. Summer.

2. Spiesia múlticeps (Nutt.) Kuntze. Tufted Oxytrope. (Fig. 2157.)

Oxytropis multiceps Nutt.; T. & G. Fl. N. A. 1: 341. 1838.

Spiesia multiceps Kuntze, Rev. Gen. Pl. 207. 1891.

Nearly acaulescent, with a deep root, tufted and matted, silky-canescent, 3′ high or less. Stipules membranous, acute, adnate to the petiole; leaves pinnate; leaflets 7–9, oblong, 3″–6″ long, 1″–2″ wide; scape ½′–1½′ long, about equalling the leaves, or shorter, 1–3-flowered; flowers purple, nearly 1′ long; calyx slightly pubescent, its teeth short; pod short-stalked in the calyx, coriaceous, little inflated, about ½′ long, 1-celled, acute, pubescent, enclosed by the swollen calyx.

Western Nebraska, Wyoming and Colorado. Summer.

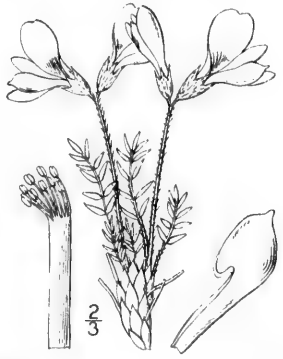
3. Spiesia àrctica (R. Br.) Kuntze. Arctic Oxytrope. (Fig. 2158.)

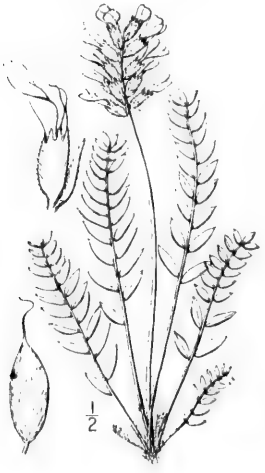
Oxytropis arctica R. Br. App. Parry's Voy. 278. 1823.

Spiesia arctica Kuntze, Rev. Gen. Pl. 206. 1891.

Acaulescent, tufted, villous-pubescent, 1′–4′ high. Stipules membranous, lanceolate, imbricated, pubescent; leaves pinnate; leaflets 7–21, linear, or linear-oblong, obtusish, 2″–4″ long, about ½″ wide; peduncles exceeding the leaves, 2–5-flowered at the summit; flowers violet (?), 6″–10″ long; calyx pubescent; pod coriaceous, little or not inflated, oblong or ovoid-oblong, sessile, pubescent, incompletely 2-celled.

Shores of the Gulf of St. Lawrence; Hudson Strait, and along the Arctic seacoast. Summer.





4. Spiesia campéstris (L.) Kuntze. Yellow Oxytrope. (Fig. 2159.)

Astragalus campestris L. Sp. Pl. 761. 1753.

Oxytropis campestris DC. Astrag. 74. 1802.

Spiesia campestris Kuntze, Rev. Gen. Pl. 206. 1891.

Acaulescent or nearly so, much tufted, sparingly pubescent, or glabrate, 6′–9′ high. Stipules membranous, lanceolate, acuminate, imbricated, 3″–4″ long; leaves pinnate, 3′–6′ long; leaflets 13–27, lanceolate or oblong, acute or obtusish at the apex, rounded at the base, sessile, 3″–10″ long, 1″–2½″ wide; peduncles generally exceeding the leaves; flowers several or numerous in short spikes or heads, white, yellowish white, or blue, 6″–8″ long; pods sessile, papery in texture, ovoid or oblong, blackish-pubescent, 6″–9″ long, acuminate with the subulate style, incompletely 2-celled.

In rocky places, Quebec, northern Maine and New Brunswick to Labrador and Hudson Strait. Also in Europe. Summer.

5. Spiesia Lámberti (Pursh) Kuntze. Stemless Loco-weed or Crazy-weed. Colorado Loco vetch. (Fig. 2160.)

Oxytropis Lamberti Pursh, Fl. Am. Sept. 740. 1814.
Spiesia Lamberti Kuntze, Rev. Gen. Pl. 207. 1891.

Silky-pubescent with appressed or slightly spreading hairs, acaulescent or nearly so, tufted. Stipules imbricated, membranous, pubescent, lanceolate, acute or acuminate, 4″–7″ long; leaves 4′–9′ long; leaflets 9–19, linear, oblong or sometimes lanceolate, acute or obtusish at the apex, mainly rounded at the base, 8″–12″ long, 1½″–3″ wide; peduncles longer than the leaves, 6′–12′ long; flowers purple, yellowish, or purplish, 8″–15″ long, in dense heads or spikes; pod incompletely 2-celled, coriaceous, sessile, erect, ovoid-cylindric, densely pubescent, long-acuminate, 6″–12″ long, exceeding the calyx.

Prairies, Minnesota to the Northwest Territory and British Columbia, south to Texas and New Mexico. April–Aug.

Spiesia Lámberti sericea (Nutt.) Rydb. Bot. Surv. Neb. 3: 32. 1894.
Oxytropis sericea Nutt.; T. & G. Fl. N. A. 1: 339. 1838.

More silky; leaflets wider, lanceolate or oblong; flowers often yellow. Range nearly of the type.

6. Spiesia spléndens (Dougl.) Kuntze. Showy Oxytrope. (Fig. 2161.)

Oxytropis splendens Dougl.; Hook. Fl. Bor. Am. 1: 147. 1833.
Spiesia splendens Kuntze, Rev. Gen. Pl. 207. 1891.

Densely silvery and silky-villous, acaulescent, tufted. Stipules imbricated, membranous, villous-pubescent, lanceolate, acute, 4″–6″ long; leaves 4′–9½′ long, erect; leaflets very numerous, in verticils of 3–6, oblong or oblong-lanceolate, acute or acutish at the apex, rounded at the base, 6″–10″ long, 2″–4″ wide; peduncles exceeding the leaves, sometimes 12′ long; flowers deep purple, about 6″ long, in dense spikes; pods ovoid, erect, 2-celled or nearly so, long-acuminate with a spreading or oblique tip, villous-pubescent, little exceeding the calyx, 6″–9″ long.

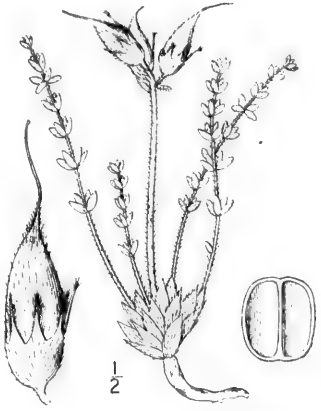
Prairies, Minnesota and Manitoba to the Northwest Territory, south to Colorado and New Mexico. June–Aug.

7. Spiesia Bélli Britton. (Fig. 2162.)

Spiesia Belli Britton; J. M. Macoun, Can. Rec. Sci. 1894: 148. 1894.

Acaulescent, tufted, loosely villous with white hairs. Stipules membranous, ovate or oblong, acute or acuminate, imbricated, villous or glabrate, 5″–7″ long; leaves 3′–6′ long; leaflets oblong or oblong-lanceolate, subacute at the apex, rounded at the base, 3″–4″ long, 1″–2″ wide, in verticils of 3 or 4; peduncles about equalling the leaves; inflorescence capitate; pod oblong, erect-spreading, densely pubescent with black hairs or some longer whitish ones intermixed, about 9″ long and 3″ thick, 2–3 times as long as the black-pubescent calyx, very nearly or quite 2-celled by the intrusion of the ventral suture, the tip erect; corolla not seen.

Hudson Bay. Summer.



28. GLYCYRRHÌZA L. Sp. Pl. 741. 1753.

Perennial herbs, with thick sweet roots, odd-pinnate leaves, and spicate or capitate flowers. Calyx-teeth nearly equal. Standard narrowly ovate or oblong, short-clawed; wings oblong, acutish; keel acute or obtuse, shorter than the wings. Stamens mainly diadelphous; anthers alternately smaller and larger. Pod sessile, covered with prickles or glands, nearly indehiscent, continuous between the seeds. [Greek, sweet-root.]

About 15 species, natives of the north temperate zone, southern South America and Australia. The following is the only known North American species.

1. Glycyrrhiza lepidòta Pursh. Wild Liquorice. (Fig. 2163.)

Glycyrrhiza lepidota Pursh, Fl. Am. Sept. 480. 1814.

Erect, branching, 1°–3° high, the foliage with minute scales or dots. Stipules lanceolate or ovate-lanceolate, acute, 2″–3″ long, deciduous; leaves petioled; leaflets 11–19, lanceolate, or oblong, acute or obtuse and mucronate at the apex, rounded or narrowed at the base, entire, very short-stalked, 10″–18″ long, 3″–6″ wide; peduncles axillary, much shorter than the leaves; spikes dense, many-flowered, 1′–2′ long, about 9″ thick; flowers yellowish-white, 6″ long; calyx-teeth slender, longer than the tube; pod about 6″ long, few-seeded, oblong, densely covered with hooked prickles.

Fort Erie, Ontario; Manitoba, Minnesota, north to Hudson Bay, west to Washington, south to Iowa, Missouri, Chihuahua and California. May–Aug.

29. CORONÍLLA L. Sp. Pl. 742. 1753.

Herbs, with odd-pinnate leaves, and purple purplish or yellow flowers, in peduncled heads or umbels. Calyx-teeth nearly equal, the 2 upper more or less united. Petals clawed; standard nearly orbicular; wings oblong or obliquely obovate; keel incurved, beaked. Stamens diadelphous (9 and 1); anthers all alike. Pod terete, angled or compressed, curved or straight, jointed. [Diminutive of *corona*, crown.]

About 25 species, natives of Europe, Asia and northern Africa.

1. Coronilla vària L. Coronilla. Axseed. Axwort. (Fig. 2164.)

Coronilla varia L. Sp. Pl. 743. 1753.

Perennial, straggling or ascending, glabrous, branching, 1°–2° long. Leaves sessile; leaflets 11–25, oblong or obovate, obtuse and mucronate at the apex, narrowed or rounded at the base, 6″–9″ long, 1½″–3″ wide; peduncles longer than the leaves; flowers 4″–6″ long, pinkish-white (standard pink, wings white or purple-tipped), in dense umbels; pedicels 1″–2″ long; pod coriaceous, linear, 4-angled, the joints 3″–4″ long.

Roadsides and waste places, Connecticut, southern New York and New Jersey. Adventive or naturalized from Europe. June–Aug.

30. HEDÝSARUM L. Sp. Pl. 745. 1753.

Perennial herbs, sometimes shrubby, with odd-pinnate leaves, and showy flowers in axillary peduncled racemes. Calyx bracteolate, its teeth nearly equal. Standard obovate or obcordate, narrowed at the base; wings oblong, shorter than the standard; keel longer than the wings, obtuse, obliquely truncate. Stamens diadelphous (9 and 1). Pod flat, linear, its joints oval, orbicular or quadrate. [Greek, sweet-broom.]

About 60 species, natives of the north temperate zone and northern Africa. Besides the following, another may occur in northwestern North America.

Calyx-teeth ovate, acute, shorter than the tube. 1. *H. Americanum.*
Calyx-teeth subulate, acuminate, longer than the tube. 2. *H. Mackenzii.*

1. Hedysarum Americànum (Michx.) Britton. Hedysarum. (Fig. 2165.)

Hedysarum alpinum var. *Americanum* Michx. Fl. Bor. Am. 2: 74. 1803.
Hedysarum boreale Nutt. Gen. 2: 110. 1818.
Hedysarum Americanum Britton, Mem. Torr. Club, 5: 201. 1894.

Stem erect or somewhat decumbent, glabrous or nearly so, 6′–2½° high, generally simple. Leaves short-petioled; stipules lanceolate, long-acuminate, 2″–8″ long; leaflets 11–21, oblong or oblanceolate, obtuse and often mucronulate at the apex, mostly rounded at the base, 6″–10″ long, 2″–5″ wide; racemes longer than the leaves; flowers violet-purple, or sometimes white, numerous, deflexed, 7″–10″ long, in rather loose elongated racemes; calyx-teeth ovate, acute, shorter than the tube; pod ¼′–1½′ long, drooping, of 3–5 oval or orbicular nearly glabrous strongly reticulated joints, about 2½″ wide.

In rocky places, northern New England to Labrador and Newfoundland, west to Alaska and British Columbia, south in the Rocky Mountains to Utah and in the Black Hills. Recorded by Michaux from the Alleghanies. Occurs also in northeastern Asia. June–July.

2. Hedysarum Mackénzii Richards. Mackenzie's Hedysarum. (Fig. 2166.)

Hedysarum Mackenzii Richards. App. Frank. Journ. 17. 1823.
Hedysarum Americanum Mackenzii Britton, Mem. Torr. Club, 5: 202. 1894.

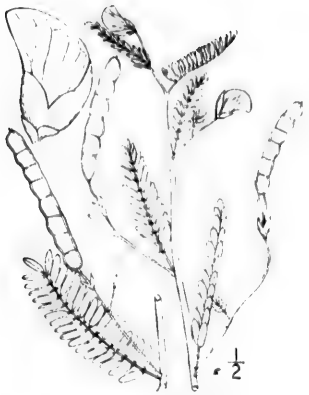
Similar to the preceding species, but usually minutely pubescent; stem decumbent or erect, 1°–2½° high, sometimes branched. Leaflets 11–19; flowers slightly larger, violet-purple, deflexed; calyx-teeth subulate, acuminate, longer than the tube, or equalling it; pod minutely pubescent, 3–8-jointed.

Hudson Bay (according to Macoun); Northwest Territory to Alaska, south in the Rocky Mountains to Colorado. Summer.

31. AESCHYNÓMENE L. Sp. Pl. 713. 1753.

Herbs, or in tropical regions shrubs, mainly with odd-pinnate leaves, and yellow flowers in axillary panicles or clusters. Calyx-teeth nearly equal, more or less united into 2 lips. Standard orbicular, short-clawed; wings oblong or obliquely obovate, about as long as the standard; keel curved. Stamens diadelphous (5 and 5); anthers all alike. Ovary stipitate; ovules 2–∞. Pod stalked in the calyx, flat, jointed. [Greek, to be ashamed, referring to the sensitive leaves.]

About 55 species, widely distributed in warm and tropical regions. Besides the following, another occurs in the southern States.



1. Aeschynomene Virginica (L.) B.S.P. Sensitive Joint Vetch. (Fig. 2167.)

Hedysarum Virginicum L. Sp. Pl. 750. 1753.
Æschynomene hispida Willd. Sp. Pl. 3: 1163. 1800.
Æschynomene Virginica B.S.P. Prel. Cat. N. Y. 13. 1888.

Annual, herbaceous, branched, erect, rough-pubescent or glabrate, 2°–5° high. Stipules membranous, ovate, acuminate, 3″–4″ long, deciduous; leaves short-petioled; leaflets 25–55, oblong, linear-oblong or oblanceolate, obtuse at the apex, narrowed or rounded at the base, 3″–9″ long; somewhat sensitive; flowers few, reddish-yellow, about 5″ long; petals veined; pod linear, 1′–2½′ long, 3″ wide, sparingly tuberculate or glabrous, of 5–10 nearly square easily separable joints.

River banks, southeastern Pennsylvania, southwestern New Jersey to Florida, west to Louisiana. Called also Bastard Sensitive Plant. Aug.–Sept.

32. STYLOSÁNTHES Sw. Prodr. Fl. Ind. Occ. 108. 1788.

Perennial herbs, mainly with villous or viscid pubescence, 3-foliolate leaves, and yellow terminal or axillary spicate or capitate flowers. Calyx-tube campanulate, its teeth membranous, the 4 upper ones more or less united. Petals and stamens inserted at or near the summit of the tube; standard orbicular; wings oblong; keel curved, beaked. Stamens monadelphous; anthers alternately longer and shorter. Ovary nearly sessile; ovules 2–3; style filiform. Pod sessile, flattened, 1–2-jointed, reticulate, dehiscent at the summit. [Greek, column-flower, alluding to the column-like calyx-tube.]

About 25 species, natives of warm and temperate regions. Besides the following, another occurs in the southern States.

1. Stylosanthes biflòra (L.) B.S.P. Pencil-flower. (Fig. 2168.)

Trifolium biflorum L. Sp. Pl. 773. 1753.
Stylosanthes elatior Sw. Svensk. Acad. Handl. 1789: 296. *pl. 2. f. 2.* 1789.
Stylosanthes biflora B.S.P. Prel. Cat. N. Y. 13. 1888.

Wiry, branched from the base and often also above, stems ascending, erect or spreading, villous-pubescent or glabrate, 6′–24′ long. Stipules sheathing the stem, linear-filiform above; leaves short-petioled; leaflets 3, oblong, linear-oblong or oblanceolate, acute or acutish and mucronate at the apex, narrowed or cuneate at the base, 6″–18″ long, 1½″–2″ wide, strongly veined, the terminal one stalked; flowers few, mainly terminal, sessile or nearly so, yellow, ciliate-bracted, 3″–4″ long; pod obovate or suborbicular, pubescent, about 2″ long, of 1 perfect and 1 abortive joint.

In dry soil, southeastern New York to Florida, west to Indiana, Kansas, the Indian Territory and Louisiana. June–Sept.

33. ZÓRNIA Gmel. Syst. 2: 1096. 1791.

Herbs, with digitately 4-foliolate or 2-foliolate petioled leaves, the leaflets not stipellate, the stipules small or foliaceous, sagittate. Flowers yellow in our species, small, interruptedly spicate, large-bracted, sessile, rarely solitary, the spikes axillary and terminal, peduncled. Bracts 2 together, nearly enclosing the flower. Calyx 2-lipped, 5-lobed. Standard nearly orbicular, clawed; wings oblique; keel incurved. Stamens monadelphous; anthers alternately longer and shorter. Ovary sessile; ovules several; style very slender. Loment flat, several-jointed. [In honor of Johann Zorn, a German apothecary.]

About 12 species, all natives of America, 2 of them naturalized in the warmer regions of the Old World. Besides the following, another occurs in the southwestern States.

1. Zornia bracteàta (Walt.) Gmel.
Zornia. (Fig. 2169.)

Anonymos bracteata Walt. Fl. Car. 181. 1788.
Zornia bracteata Gmel. Syst. 2: 1096. 1791.
Zornia tetraphylla Michx. Fl. Bor. Am. 2: 76. 1803.

Perennial by a long woody root, glabrous or sparingly finely pubescent; stems wiry, prostrate, 1°–2° long. Stipules about 3″ long; petioles ½′–1′ long, slender; leaflets 4, oblong, lanceolate, or oblong-obovate, acute at both ends, ½′–1′ long, or those of the lower leaves obtuse at the apex and shorter; peduncles longer than the petioles; spikes several-flowered, much interrupted in fruit, 2′–4′ long; bracts ovate, or broadly oval, 3″–5″ long, acute or acutish; pod 3–5-jointed, the joints oval, 1½″–2″ long, densely spinulose.

In dry sandy soil, southeastern Virginia to Florida, Texas and Mexico. May–Aug.

Arachis hypogaèa L., the Pea-nut, is occasionally seen as a waif, not permanently established.

34. MEIBÒMIA Adans. Fam. Pl. 2: 509. 1763.

[DESMODIUM Desv. Journ. Bot. (II.) 1: 122. *pl. 5, f. 15.* 1813.]

Perennial herbs, sometimes woody at the base, erect, ascending or trailing, with stipellate 3-foliolate or in some species 1- or 5-foliolate leaves, and usually small flowers in terminal or axillary compound or simple racemes or panicles. Calyx-tube short, its teeth more or less united into 2 lips, the upper one variously 2-toothed, the 3 lower teeth acute or attenuate. Standard oblong, ovate or orbicular, narrowed or rarely clawed at the base; wings obliquely oblong; keel nearly straight, obtuse. Stamens monadelphous or diadelphous (9 and 1); anthers all alike. Ovary sessile or stalked; ovules 2–∞. Loment flat, sessile or stalked, several jointed, the joints mainly coriaceous and pubescent or muricate, indehiscent or rarely partially dehiscent, readily separable. [Named for Dr. Brandus Meibom, died at Helmstadt, 1740.]

A genus of about 160 species, natives of warm and temperate North and South America, South Africa and Australia. Besides the following, about 20 others occur in the southern and southwestern States. Our species are known as Tick-trefoil, or Tick-seed.

* Loment not constricted above, deeply constricted below, long-stalked; leaflets broad.
Panicle arising from the base of the plant; peduncle usually leafless. 1. *M. nudiflora.*
Panicle terminal; leaves crowded at its base. 2. *M. grandiflora.*
leaves scattered along the stem. 3. *M. paniculata.*

* * Loment constricted on both margins, more deeply below than above.
† Stems trailing or reclining.
Leaflets orbicular or nearly so.
Leaflets 1′ long or less, glabrate, coriaceous. 4. *M. arenicola.*
Leaflets 1′–2′ long, thinnish, usually quite pubescent. 5. *M. Michauxii.*
Leaflets ovate or oval.
Corolla whitish; leaves yellowish green; stipules broadly ovate. 6. *M. ochroleuca.*
Corolla purple; leaves dull green; stipules subulate. 7. *M. glabella.*
† † Stems erect or ascending.
Leaves sessile or nearly so; leaflets linear or lanceolate. 8. *M. sessilifolia.*
Leaves petioled.
Leaflets narrowly linear; joints of the loment usually concave on the back 9. *M. stricta.*
Leaflets broad (except in *M. paniculata Chapmani*).
1. Joints of the loment notably longer than broad.
Leaflets obtuse, rough-pubescent, yellowish green. 10. *M. canescens.*
Leaflets long-acuminate, scabrate above, slightly villous beneath. 11. *M. longifolia.*
Leaflets long-acuminate, glabrous, glaucous beneath. 12. *M. bracteosa.*
2. Joints of the loment little longer than broad.
(**a.**) Loment distinctly long-stalked in the calyx.
Plants glabrous, or nearly so (except in *M. paniculata pubens*).
Leaflets lanceolate or oblong. 13. *M. paniculata.*
Leaflets broadly ovate or oval, glaucous beneath. 14. *M. laevigata.*
Plants pubescent or scabrous.
Leaflets thick, coriaceous, villous and reticulated beneath. 15. *M. rhombifolia.*
velvety-pubescent beneath. 16. *M. viridiflora.*
Leaflets scarcely coriaceous, appressed-pubescent or villous beneath. 17. *M. Dillenii.*
(**b.**) Loment sessile in the calyx, or nearly so.
Loment-joints 4–7; flowers numerous, showy.
Leaflets coriaceous, strongly reticulated beneath. 18. *M. Illinoensis.*
Leaflets not coriaceous, scarcely reticulated beneath; loments numerous. 19. *M. Canadensis.*
Loment-joints 1–3.
Leaflets scabrous, 1′–2′ long. 20. *M. rigida.*
Leaflets not scabrous, 5″–10″ long.
Plant nearly glabrous throughout. 21. *M. Marylandica.*
Stem pubescent; leaflets and petioles ciliate. 22. *M. obtusa.*

1. Meibomia nudiflòra (L.) Kuntze. Naked-flowered Tick-trefoil. (Fig. 2170.)

Hedysarum nudiflorum L. Sp. Pl. 749. 1753.
Desmodium nudiflorum DC. Prodr. 2: 330. 1825.
Meibomia nudiflora Kuntze, Rev. Gen. Pl. 197. 1891.

Slender, erect or ascending, the leaves clustered at the summit of the sterile stems, the peduncle arising from the base of the plant, leafless or rarely with 1 or 2 leaves. Stipules subulate, deciduous; petioles 1′–4′ long; leaflets oval or ovate, glabrous or slightly pubescent, somewhat acuminate or with a blunt point, pale beneath, 1′–3′ long, the terminal one rhomboidal, the others inequilateral; panicles narrow, few-flowered; flowers rose-purple, 3″–5″ long; bracts deciduous; calyx-teeth obtuse, the lowest one largest; loment 2–3-jointed, the joints longer than wide, straight or concave on the back, obliquely semi-rhomboidal, pubescent with uncinate hairs, the sutures glabrous; stipe nearly as long as the pedicel.

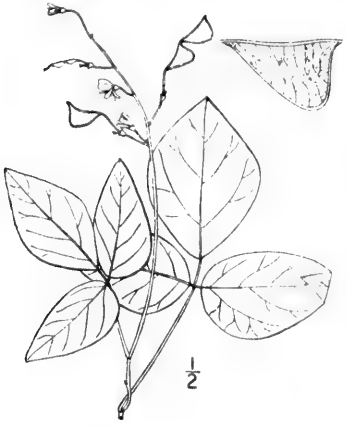
In dry woods, Quebec to Minnesota, south to Florida and Louisiana. July–Aug.

2. Meibomia grandiflòra (Walt.) Kuntze. Pointed-leaved Tick-trefoil. (Fig. 2171.)

Hedysarum grandiflorum Walt. Fl. Car. 185. 1788.
Hedysarum acuminatum Michx. Fl. Bor. Am. 2: 72. 1803.
Desmodium acuminatum DC. Prodr. 2: 329. 1825.
Meibomia grandiflora Kuntze, Rev. Gen. Pl. 196. 1891.

Erect, glabrous, or somewhat pubescent, 1°–5° high. Leaves in a cluster at the summit of the stem, from which rises the slender peduncle; petioles 3′–6′ long; stipules subulate, generally persistent; leaflets ovate, acuminate, 2′–6′ long, pubescent with scattered hairs on both surfaces; panicle ample; bracts deciduous; flowers large, purple; loment 2–3-jointed; joints longer than wide, concave above, obliquely rounded below, uncinate-pubescent; stipe as long as the pedicel.

In dry or rocky woods, Quebec to Minnesota, south to Florida, Nebraska and the Indian Territory. June–Sept.



3. Meibomia pauciflòra (Nutt.) Kuntze. Few-flowered Tick-trefoil. (Fig. 2172.)

Hedysarum pauciflorum Nutt. Gen. 2: 109. 1818.
Desmodium pauciflorum DC. Prodr. 2: 330. 1825.
Meibomia pauciflora Kuntze, Rev. Gen. Pl. 198. 1891.

Decumbent or ascending, more or less pubescent with scattered hairs, 1°–3° long. Stipules subulate, deciduous; leaves alternate, distant, petioled; leaflets ovate, obtuse or bluntly acuminate, pubescent, 1′–3′ long, the terminal one rhomboid; racemes terminal or sometimes also axillary, simple, few-flowered; calyx-lobes acute, ciliate; corolla white (?), about 3″ long; loment 1–4-jointed, the joints concave or straight on the back, obliquely rounded below, larger than those of the preceding species, uncinate-pubescent; stipe slightly shorter than the pedicel.

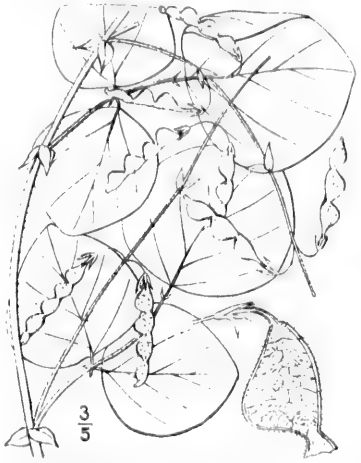
In woods, Ontario? and western New York to Florida, west to Ohio, Arkansas and Louisiana. July–Aug.

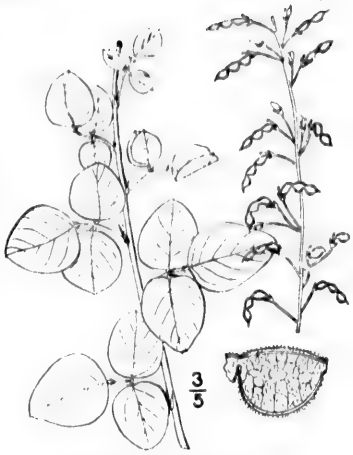
4. Meibomia arenícola Vail. Sand Tick-trefoil. (Fig. 2173.)

Hedysarum lineatum Michx. Fl. Bor. Am. 2: 72. 1803. Not L. 1759.
Desmodium lineatum DC. Prodr. 2: 330. 1825.
Meibomia arenicola Vail, Bull. Torr. Club, 23: 140. 1896.

Decumbent or prostrate, pubescent or glabrate, slender, 1°–2° long. Stipules subulate, persistent; petioles about ½′ long; leaflets ovate-orbicular, ½′–1′ long, glabrous or nearly so, coriaceous, reticulate-veined; racemes terminal and axillary, elongated, usually pubescent; flowers purple, about 2″–3″ long; pedicels slender; loment small, 2–4-jointed, the joints uncinate-pubescent, less convex above than below, 1½″–2½″ long; stipe about equalling the calyx-lobes.

In dry woods, Maryland to Florida, west to Louisiana. July–Sept.





5. Meibomia Michàuxii Vail. Prostrate Tick-trefoil. (Fig. 2174.)

Hedysarum rotundifolium Michx. Fl. Bor. Am. 2: 72. 1803. Not Vahl. 1791.
Desmodium rotundifolium DC. Prodr. 2: 330. 1825.
Meibomia rotundifolia Kuntze, Rev. Gen. Pl. 197. 1891.
M. Michauxii Vail, Bull. Torr. Club, 23: 140. 1896.

Prostrate, 2°–6° long, softly pubescent, or densely villous. Stipules ovate or triangular-ovate, persistent, acuminate, somewhat cordate, striate, ciliate; leaves petioled; leaflets nearly orbicular, pubescent, 1′–2½′ long; panicles terminal and axillary, loose; bracts deciduous; flowers purple, 3″–5″ long; calyx-lobes ciliate; loment 1′ long or more, 3–5-jointed; joints obliquely rhomboid below, slightly convex above, uncinate-pubescent; stipe equalling or longer than the calyx-lobes.

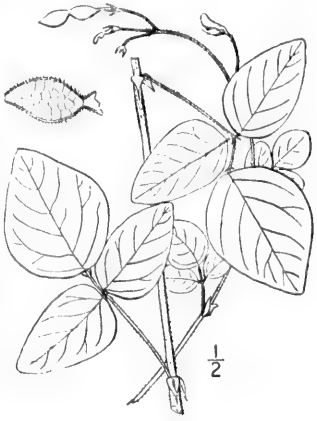
Dry woods, Maine and Ontario to Minnesota, south to Florida and Louisiana. July–Sept.

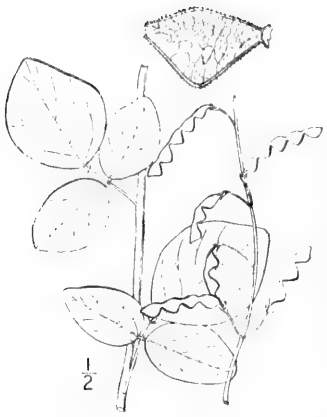
6. Meibomia ochroleùca (M. A. Curtis) Kuntze. Cream-flowered Tick-trefoil. (Fig. 2175.)

Desmodium ochroleucum M. A. Curtis; Canby, Proc. Acad. Phil. 1864: 17. 1864.
Meibomia ochroleuca Kuntze, Rev. Gen. Pl. 198. 1891.

Procumbent or decumbent, hirsute, 1°–3° long. Stipules ovate, persistent, cordate, striate; petioles ½′–1½′ long; leaflets yellowish green, rugose or nearly smooth above, reticulate-veined and somewhat scabrous beneath, 8″–2′ long, the terminal one rhomboid, the lateral obliquely ovate, smaller, or sometimes wanting; racemes terminal and axillary, simple; bracts deciduous; flowers whitish; upper calyx-lobe minutely 2-toothed, the others attenuate; loment 2–3-jointed, the joints only slightly more convex below than above, twisted, oval, pale green, glabrous except the uncinate-pubescent sutures; stipe about as long as the calyx-lobes.

In woodlands, New Jersey to Georgia; also in Tennessee and Stoddard Co., Mo. Aug.–Sept.





7. Meibomia glabélla (Michx.) Kuntze. Trailing Tick-trefoil. (Fig. 2176.)

Hedysarum glabellum Michx. Fl. Bor. Am. 2: 73. 1803.
Desmodium humifusum Beck, Bot. 86. 1833.
Meibomia glabella Kuntze, Rev. Gen. Pl. 198. 1891.

Procumbent, glabrous or nearly so, stem terete below, striate above, sometimes 8° long. Stipules lanceolate or ovate-lanceolate; leaves petioled; leaflets ovate or oval, obtuse, glabrous or sparingly pubescent above, pale beneath, 1′–2½′ long, the terminal one slightly rhomboid; racemes terminal and axillary, panicled; bracts deciduous; flowers purple; calyx-lobes acute, the upper one 2-toothed, the others attenuate; loment 3–5-jointed, the joints obliquely semi-rhomboidal, less convex above than below; stipe about 2″ long, equalling or rather longer than the calyx-lobes.

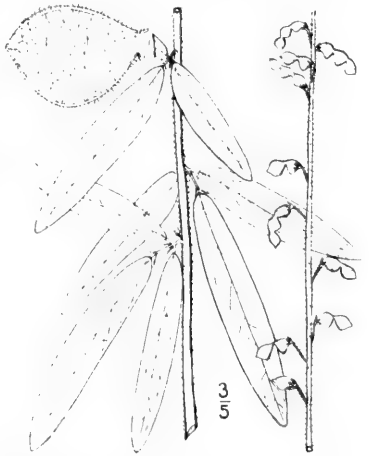
In dry sandy woods, eastern Massachusetts to New York, western New Jersey, and eastern Pennsylvania to South Carolina. Aug.–Sept.

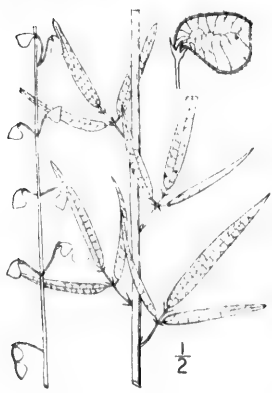
8. Meibomia sessilifólia (Torr.) Kuntze. Sessile-leaved Tick-trefoil. (Fig. 2177.)

Hedysarum sessilifolium Torr.; Curtis, Bost. Journ. Nat. Hist. 1: 123. 1834.
Desmodium sessilifolium T. & G. Fl. N. A. 1: 363. 1838.
Meibomia sessilifolia Kuntze, Rev. Gen. Pl. 198. 1891.

Erect, 2°–4° high, uncinate-pubescent. Stipules small, deciduous; leaves very nearly sessile; leaflets linear or linear-oblong, obtuse at each end, nearly glabrous above, reticulate-veined and pubescent beneath, 1′–3′ long, 3″–9″ wide; racemes terminal, simple or compound; flowers small, 2″–3″ long, purple; pedicels very short; bracts deciduous; calyx-lobes acute, the upper one obliquely 2-toothed; loment 1–3-jointed, the joints about 2″ long, obliquely obovate, hispid, somewhat twisted, less convex above than below; stipe not exceeding the calyx-lobes.

In dry soil, Massachusetts, Rhode Island and Connecticut to Michigan, south to Kentucky, Arkansas and Texas. July–Sept.





9. Meibomia stricta (Pursh) Kuntze. Stiff Tick-trefoil. (Fig. 2178.)

Hedysarum strictum Pursh, Fl. Am. Sept. 483. 1814.
Desmodium strictum DC. Prodr. 2: 329. 1825.
Meibomia stricta Kuntze, Rev. Gen. Pl. 198. 1891.

Erect, slender, finely pubescent, 2°–4° high. Stipules subulate, deciduous; leaves petioled; leaflets linear, obtuse, glabrous, thick, reticulate-veined, 1′–2½′ long, about 3″ wide; flowers 1″–2″ long; loment small, 1–3-jointed; joints semi-obovate or semi-rhomboid, often slightly concave on the back, uncinate-pubescent, about 2″ long; pedicels short; stipe about equalling the calyx-lobes.

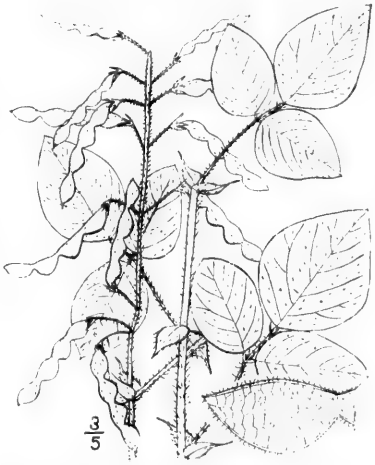
Pine barrens of New Jersey to Florida, west to Louisiana. July–Sept.

10. Meibomia canéscens (L.) Kuntze. Hoary Tick-trefoil. (Fig. 2179.)

Hedysarum canescens L. Sp. Pl. 748. 1753.
Desmodium canescens DC. Prodr. 2: 328. 1825.
M. canescens Kuntze, Rev. Gen. Pl. 195. 1891.

Erect, much branched, densely short- or villous-pubescent, 3°–5° high. Stipules ovate, acuminate, somewhat cordate, persistent; leaves petioled; leaflets ovate, obtuse or acutish, 1′–4′ long, scabrous above, pubescent beneath, ciliate, the terminal one commonly rhomboid and larger than the lateral ones; racemes terminal, compound; bracts deciduous; upper lobe of the calyx 2-toothed, the others attenuate; flowers 2″–2½″ long; loment 4-6-jointed, joints longer than wide, unequally rhomboid, 4″–6″ long; stipe about equalling the upper lobe of the calyx.

In rich soil Ontario to Massachusetts, Florida, Minnesota and Texas. July–Sept.



Meibomia canéscens hirsùta (Hook.) Vail, Bull. Torr. Club, 19: 111. 1892.
Desmodium Canadense var. *hirsuta* Hook. Comp. Bot. Mag. 1: 23. 1835.

Stem and branches more densely villous-pubescent; leaflets narrower. Missouri.

11. Meibomia longifòlia (T. & G.) Vail. Long-leaved Tick-trefoil. (Fig. 2180.)

Desmodium Canadense var. *longifolium* T. & G. Fl. N. A. 1: 365. 1838.
Meibomia longifolia Vail, Bull. Torr. Club, 23: 140. 1896.

Erect, 2°–5° high, the angled stems and panicle minutely pubescent. Stipules lanceolate-setaceous, deciduous or persistent; leaves petioled; leaflets 2′–5′ long, lanceolate-ovate or ovate, cuspidate, scabrate or rugose above, lighter, appressed-pubescent or villous beneath; flowers showy, purple; bracts deciduous; the upper calyx-lobe 2-toothed, the lower ones attenuate; loment 1′–3′ long, 4–6 jointed the joints triangular-oblong, or lozenge-shaped, uncinate-pubescent throughout; stipe about the length of the calyx-lobes.

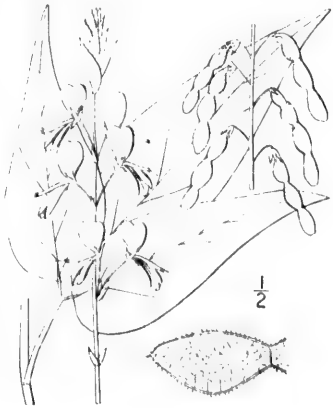
In rich soil and low woods, Illinois to Louisiana and Alabama. June–Sept.

12. Meibomia bracteòsa (Michx.) Kuntze. Large-bracted Tick-trefoil. (Fig. 2181.)

Hedysarum bracteosum Michx. Fl. Bor. Am. 2: 73. 1803.
Desmodium bracteosum DC. Prodr. 2: 320. 1825.
Desmodium cuspidatum Hook. Comp. Bot. Mag. 1: 23. 1835.
Meibomia bracteosa Kuntze, Rev. Gen. Pl. 195. 1891.

Erect, 3°–6° high, glabrous or nearly so below, the panicle finely pubescent. Stipules lanceolate, cuspidate, somewhat cordate, deciduous or persistent; leaves petioled; leaflets 2′–8′ long, ovate or ovate-lanceolate, acuminate, glabrous or very nearly so; flowers large, purple, 4″–5″ long; bracts deciduous, cuspidate, striate; calyx deeply 2-lipped, the upper lobe 2-toothed, the others acute; loment 1′–3′ long, 3–7-jointed, the joints obliquely-oblong, about twice as long as wide, uncinate-pubescent, especially on the sutures; stipe about the length of the lower calyx-lobes.

In thickets, Ontario to Minnesota, Florida, Missouri and Texas. Aug.–Sept.



13. Meibomia paniculàta (L.) Kuntze. Panicled Tick-trefoil. (Fig. 2182.)

Hedysarum paniculatum L. Sp. Pl. 749. 1753.
Desmodium paniculatum DC. Prodr. 2: 329. 1825.
Meibomia paniculata Kuntze, Rev. Gen. Pl. 198. 1891.

Erect, slender, nearly glabrous, 2°–4° high. Stipules small, subulate, mainly deciduous; leaves petioled; leaflets oblong-lanceolate or linear-lanceolate, obtuse, 1′–2′ long; racemes terminal, compound; bracts deciduous; upper calyx-lobe deeply 2-toothed, the 3 lower ones attenuate, with the middle one elongated; flowers purple, 3″–4″ long; loment 1′ long or more, 4–6-jointed, the joints obliquely triangular or rhomboid, minutely uncinate-pubescent; stipe nearly equalling the lower lobes of the calyx.

In dry soil, Ontario to Minnesota, south to Massachusetts, Florida and Texas. July–Sept.

Meibomia paniculàta Chápmani Britton, Mem. Torr. Club, 5: 204. 1894.
Desmodium paniculatum var. *angustifolium* T. & G. Fl. N. A. 1: 364. 1838.
Meibomia angustifolia Kearney, Bull. Torr. Club, 21: 481. 1894. Not Kuntze, 1891.

More slender, leaflets linear. Intermediate forms also occur. In dry, sandy soil, Virginia to Florida, west to Kentucky and Texas.

Meibomia paniculàta pùbens (T. & G.) Vail, Bull. Torr. Club, 19: 112. 1892.
Desmodium paniculatum var. *pubens* T. & G. Fl. N. A. 1: 364. 1838.
Desmodium pubens Young, Fl. Texas, 233. 1873.

Stems puberulent; leaflets coriaceous when old, oblong-lanceolate, sometimes scabrous above, pubescent beneath; loment-joints strongly angled on the back. In dry sandy soil, Virginia to Florida, the Indian Territory, and Texas.

14. Meibomia laevigàta (Nutt.) Kuntze. Smooth Tick-trefoil. (Fig. 2183.)

Hedysarum laevigatum Nutt. Gen. 2: 109. 1818.
Desmodium laevigatum DC. Prodr. 2: 329. 1825.
Meibomia laevigata Kuntze, Rev. Gen. Pl. 198. 1891.

Erect or ascending, 2°–4° high, glabrous. Stipules subulate, deciduous; petioles 1′–2′ long, leaflets ovate, acutish, somewhat glaucous beneath, the terminal one larger than the lateral and more or less rhomboid; racemes terminal, compound, slightly pubescent; bracts deciduous; calyx scabrous, the upper lobe entire or minutely 2-toothed, the 3 lower attenuate; flowers pink, 5″–6″ long; loment 3–4-jointed, the joints triangular, angled on the back, uncinate-pubescent; stipe 2″–3″ long.

In dry woods, southern New York to Florida, Missouri and Texas. Stem terete, glaucous. Aug.–Sept.

15. Meibomia rhombifòlia (Ell.) Vail. Rhomb-leaved Tick-trefoil. (Fig. 2184.)

Hedysarum rhombifolium Ell. Bot. S. C. & Ga. 2: 216. 1824.
Desmodium rhombifolium DC. Prodr. 2: 330. 1825.
Desmodium Floridanum Chapm. Fl. 102. 1860.
Meibomia Floridana Kuntze, Rev. Gen. Pl. 198. 1891.
M. rhombifolia Vail, Bull. Torr. Club, 19: 113. 1892.

Erect or ascending, 2°–3° high or more, uncinate-pubescent, simple or branched. Stipules subulate, taper-pointed; leaves ovate, often mucronulate, coriaceous, scabrous above, villous and reticulated beneath, 2′–3½′ long, the terminal rhomboid, the lateral ones often wanting; racemes terminal, simple or panicled, elongated, usually leafless; bracts minute, deciduous; calyx-lobes acute, the upper one 2-toothed; loment 2–5-jointed, the joints obliquely semi-rhomboid, rounded on the back, uncinate-pubescent; stipe often as long as the lowest joint.

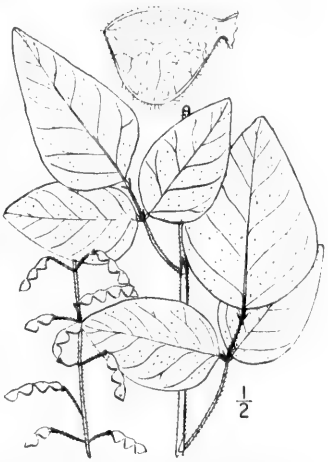
In sandy soil and pine lands, Virginia and Florida, west to Alabama and Louisiana. May–Sept.

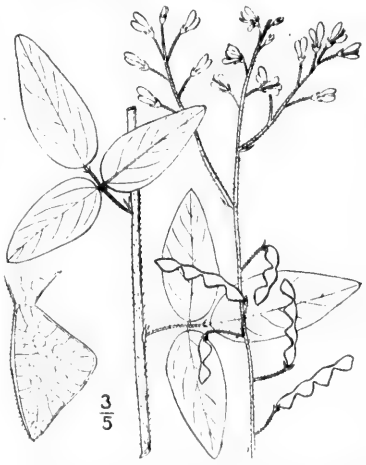
16. Meibomia viridiflòra (L.) Kuntze. Velvet-leaved Tick-trefoil. (Fig. 2185.)

Hedysarum viridiflorum L. Sp. Pl. 748. 1753.
Desmodium viridiflorum Beck, Bot. 84. 1833.
Meibomia viridiflora Kuntze, Rev. Gen. Pl. 197. 1891.

Erect, rather stout, downy-pubescent, 2°–4° high. Stipules lanceolate, mainly deciduous; petioles ½′–1½′ long; leaflets broadly ovate, rough above, densely velvety-pubescent beneath, 1′–3½′ long, the terminal one somewhat rhomboid; racemes compound, elongated, terminal, uncinate-pubescent; bracts deciduous; upper calyx-lobe minutely 2-toothed, the 3 lower ones attenuate; flowers purple, 3″–4″ long; loment 2–4-jointed, the joints semi-rhomboid, uncinate, about 2″ long; stipe about equalling the lower lobes of the calyx.

Dry woods, eastern Pennsylvania and southern New York to Florida, west to Michigan, Missouri and Texas. Aug.–Oct.





17. Meibomia Dillènii (Darl.) Kuntze. Dillen's Tick-trefoil. (Fig. 2186.)

Hedysarum Marylandicum Willd. Sp. Pl. 3: 1189. 1803. Not L. 1753.
Desmodium Dillenii Darl. Fl. Cest. 414. 1837.
Meibomia Dillenii Kuntze, Rev. Gen. Pl. 195. 1891.

Erect, 2°–3° high, pubescent with scattered hairs, or nearly glabrous. Stipules subulate, mainly deciduous; petioles 1′–2′ long; leaflets usually thin, oval or oblong-ovate, obtuse, 1½′–4′ long, ½′–1½′ wide, sparingly pubescent or glabrous above, softly pubescent or villous beneath; racemes terminal, compound, loose; bracts small, deciduous; upper calyx-lobe entire or minutely 2-toothed, the lower ones slender; flowers 3″–4″ long; loment 2–4-jointed, the joints nearly triangular, about 3″ long, somewhat convex on the back, uncinate-pubescent; stipe shorter than the calyx-lobes.

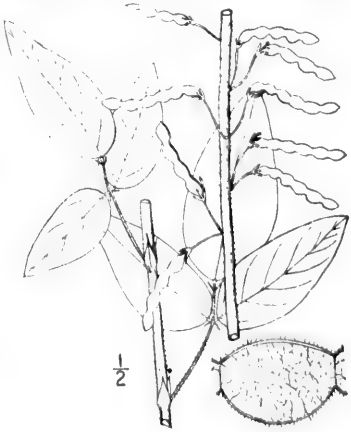
Woods, Maine and Ontario to Minnesota, Virginia, Kentucky, Missouri and Texas. Variable. June–Sept.

18. Meibomia Illinoénsis (A. Gray) Kuntze. Illinois Tick-trefoil. (Fig. 2187.)

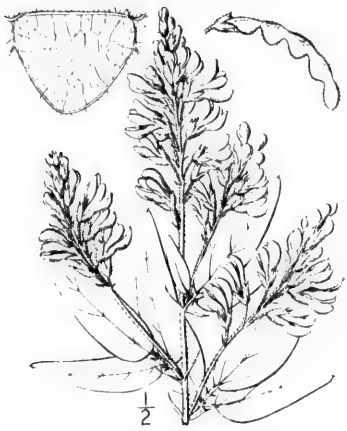
Desmodium Illinoense A. Gray, Proc. Am. Acad. 8: 280. 1870.
Meibomia Illinoensis Kuntze, Rev. Gen. Pl. 198. 1891.

Erect, stout, 2°–4° high, uncinate-pubescent. Stipules ovate, acute, cordate, ciliate, pubescent, persistent; petioles 1′–2′ long; leaflets lanceolate or ovate-lanceolate, obtusish, coriaceous, scabrous above, strongly reticulate veined and cinereous beneath, 2′–3½′ long, the terminal one broader and longer than the lateral; racemes terminal, simple or compound; bracts deciduous, ovate-lanceolate; calyx-lobes acute, the upper one minutely 2-toothed; flowers 3″–4″ long; loments ½′–1′ long, often in pairs, 3–6-jointed, the joints oval or orbicular, densely uncinate-pubescent; stipe not longer than the short upper lobe of the calyx.

Prairies, Nebraska and Illinois to Iowa and Kansas. June–Sept.



19. Meibomia Canadénsis (L.) Kuntze. Canadian or Showy Tick-trefoil. (Fig. 2188.)

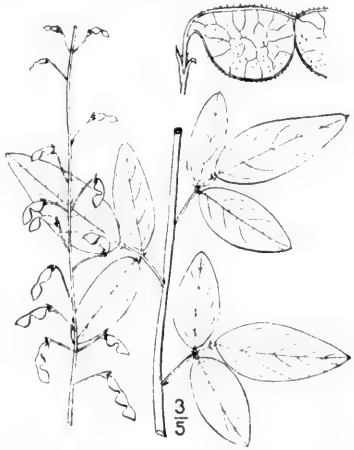


Hedysarum Canadense L. Sp. Pl. 748. 1753.
Desmodium Canadense DC. Prodr. 2: 328. 1825.
Meibomia Canadensis Kuntze, Rev. Gen. Pl. 195. 1891.

Erect, stout, pubescent, 2°–8° high. Stipules linear-lanceolate, mostly persistent; lower petioles ½′–1′ long, the upper leaves nearly sessile; leaflets oblong or lanceolate-oblong, obtuse, glabrous or roughish above, appressed-pubescent beneath; racemes terminal, densely panicled; flowers large, 5″–8″ long, conspicuous, purple or bluish-purple; bracts ovate-lanceolate, acute, ciliate, at length deciduous; calyx-lobes attenuate, the upper 2-toothed, the lower ones elongated; loment nearly sessile in the calyx, about 1′ long, 3–5-jointed; joints triangular, straight or convex on back, uncinate-pubescent.

Thickets and river-banks, New Brunswick to Manitoba and Dakota, south to North Carolina, Missouri and the Indian Territory. Our most showy-flowered species. July–Sept.

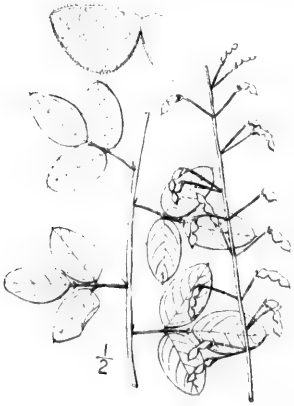
20. Meibomia rígida (Ell.) Kuntze. Rigid Tick-trefoil. (Fig. 2189.)



Hedysarum rigidum Ell. Bot. S. C. and Ga. 2: 215. 1824.
Desmodium rigidum DC. Prodr. 2: 330. 1825.
Meibomia rigida Kuntze, Rev. Gen. Pl. 198. 1891.

Erect, rather rigid, finely uncinate-pubescent, 2°–3° high. Stipules small, lanceolate, deciduous; leaves petioled; leaflets ovate or oval, obtuse, thickish, scabrous above, pubescent, especially along the veins beneath, 1′–2′ long; racemes terminal, compound; flowers very small, 1″–2″ long, purplish; upper lobe of the calyx entire or minutely 2-toothed, the 3 lower ones slender; loment sessile in the calyx, 1–3-jointed, the joints obliquely ovate, rounded on the back, uncinate-pubescent, about 1½″ long.

In dry soil, Massachusetts to Florida, west to Michigan, Nebraska and Louisiana. July–Oct.



21. Meibomia Marylándica (L.) Kuntze. Smooth Small-leaved Tick-trefoil. (Fig. 2190.)

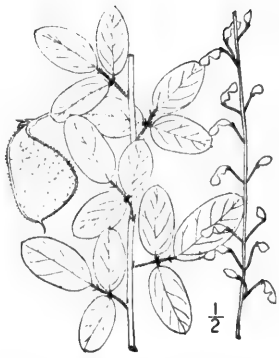
Hedysarum Marylandicum L. Sp. Pl. 748. 1753.
Desmodium Marylandicum Boott.; Darl. Fl. Cestr. 412. 1837.
Meibomia Marylandica Kuntze, Rev. Gen. Pl. 198. 1891.

Erect or ascending, glabrous, rarely with a few scattered hairs, 2°–3° high. Stipules subulate, deciduous or persistent; petioles 3″–6″ long; leaves crowded; leaflets 3″–12″ long, ovate or nearly orbicular, obtuse, glabrous on both sides, the lateral often subcordate; upper lobe of the calyx emarginate or minutely 2-toothed; racemes panicled; corolla purplish, very small, 1″–2″ long; loment sessile in the calyx or nearly so, 1–3-jointed, the joints small, obliquely oval or semi-orbicular.

In dry soil and in copses, Ontario to Massachusetts, Florida, Michigan and Louisiana. July–Sept.

22. Meibomia obtùsa (Muhl.) Vail. Hairy Small-leaved Tick-trefoil. (Fig. 2191.)

Hedysarum obtusum Muhl.; Willd. Sp. Pl. 3: 1190. 1803.
Hedysarum ciliare Muhl.; Willd. Sp. Pl. 3: 1196. 1803.
Desmodium ciliare DC. Prodr. 2: 320. 1825.
Meibomia obtusa Vail, Bull. Torr. Club, 19: 115. 1892.



Erect, bushy, 2°–3° high, pubescent. Stipules subulate, deciduous; leaves crowded; petioles ciliate, shorter than the leaflets; leaflets broadly ovate or oval, obtuse, somewhat coriaceous, more or less pubescent on both sides, ciliate, 6″–12″ long; racemes terminal, compound or simple, uncinate-pubescent; upper lobe of the calyx entire or minutely 2-toothed, the lower ones acute; flowers 1″–2″ long; loment 2–3-jointed, the joints obliquely oval; stipe not exceeding the calyx-lobes.

Dry soil, Ontario to Massachusetts and Florida, west to Michigan and Texas. July–Oct.

35. LESPEDÈZA Michx. Fl. Bor. Am. 2: 70. 1803.

Herbs, often somewhat woody, with pinnately 3-foliolate leaves, small stipules, and small purple or whitish flowers in axillary clusters, heads or panicles. Flowers often of 2 kinds intermixed, the one petaliferous and mainly sterile, the other minute, apetalous, abundantly fertile. Calyx-lobes nearly equal. Standard in the petaliferous flowers obovate or oblong, clawed; wings oblong; keel incurved. Stamens more or less diadelphous (9 and 1); anthers all alike. Ovary sessile or stipitate, 1-ovuled. Pod ovate, oblong, oval or suborbicular, flat, indehiscent, reticulated, composed of a single joint, or rarely with a second stalk-like joint at the base. [Named for Lespedez, governor of Florida, patron of Michaux.]

A genus of about 35 species, natives of eastern North America, Asia and Australia.

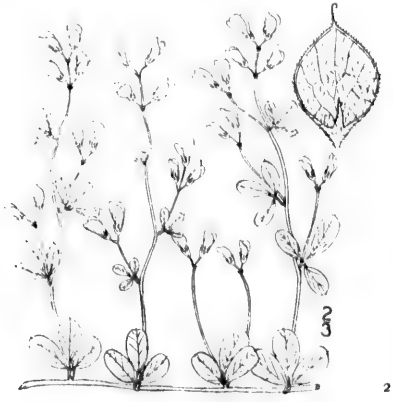
Perennials; stipules and bracts subulate; calyx-lobes narrow.

* **Both petaliferous and apetalous flowers present; corolla purple or purplish; pod exserted.**

Peduncles slender and mostly exceeding the leaves.
Petaliferous flowers capitate or spicate.
Plants trailing or diffusely procumbent.
Glabrous or appressed-pubescent. 1. *L. repens.*
Woolly or downy-pubescent. 2. *L. procumbens.*
Plants erect, rather stout, pubescent. 3. *L. Nuttallii.*
Petaliferous flowers loosely paniculate; stem erect or ascending. 4. *L. violacea.*
Flower-clusters of both kinds sessile or nearly so.
Leaflets oval, oblong or orbicular.
Foliage densely downy-pubescent. 5. *L. Stuvei.*
Foliage glabrate or appressed-pubescent. 6. *L. frutescens.*
Leaflets linear or linear-oblong. 7. *L. Virginica.*

* * **Flowers all complete; corolla whitish or yellowish; pod included or scarcely exserted.**

Leaves oblong, ovate-oblong, or nearly orbicular.
Peduncles exceeding the leaves. 8. *L. hirta.*
Peduncles shorter than the leaves. 9. *L. capitata.*
Leaves linear or linear-oblong; peduncles elongated.
Spikes densely-flowered. 10. *L. angustifolia.*
Spikes interrupted, loosely-flowered. 11. *L. leptostachya.*
Annual; stipules ovate; calyx-lobes broad. 12. *L. striata.*



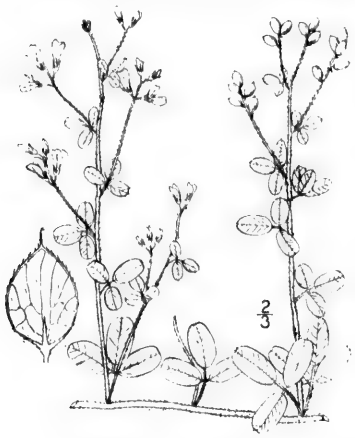
1. Lespedeza rèpens (L.) Bart. Creeping Bush-clover. (Fig. 2192.)

Hedysarum repens L. Sp. Pl. 749. 1753.
L. repens Bart. Prodr. Fl. Phil. 2: 77. 1818.

Trailing or diffusely procumbent, glabrate or appressed-pubescent, tufted, stems slender, simple or somewhat branched, 6′–24′ long. Petioles shorter than the leaves; stipules subulate, about 1″ long; leaflets oval or obovate, obtuse or retuse at the apex, narrowed or rounded at the base, 3″–8″ long; peduncles of the petaliferous flower-clusters slender, much exceeding the leaves; inflorescence rather loose; corolla violet-purple, 2″–3″ long; pod oval-orbicular, acute, finely pubescent, 1½″ long.

In dry or sandy soil, Long Island to Florida, Minnesota and Texas. Aug.–Sept.

2. Lespedeza procúmbens Michx. Trailing Bush-clover. (Fig. 2193.)

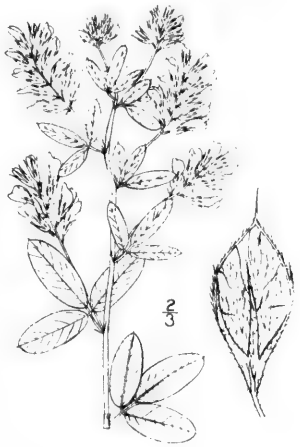


Lespedeza procumbens Michx. Fl. Bor. Am. 2: 70. 1803.

Woolly or downy-pubescent, trailing, procumbent or sometimes ascending, stouter than the preceding species, stems 12′–30′ long. Stipules subulate; petioles commonly much shorter than the leaves; leaflets oval or elliptic, rarely slightly obovate, obtuse or retuse at the apex, rounded at the base, 5″–12″ long; peduncles of the petaliferous flower-clusters longer than the leaves, or the flowers sometimes all apetalous and nearly sessile; corolla violet-purple or pinkish purple; pod oval-orbicular, acute, pubescent, 1½″ long.

In dry soil, Massachusetts to Florida, west to the Indian Territory and Louisiana. Aug.–Sept.

3. Lespedeza Nuttàllii Darl. Nuttall's Bush-clover. (Fig. 2194.)



Lespedeza Nuttallii Darl. Fl. Cest. Ed. 2, 420. 1837.

Erect or ascending, simple or branched, more or less villous-pubescent, 2°–3° high. Stipules subulate; petioles shorter than the leaves; leaflets oval, obovate or suborbicular, thickish, obtuse or emarginate at the apex, narrowed or sometimes rounded at the base, dark green and glabrous or nearly so above, villous-pubescent beneath, 4″–20″ long, 3″–10″ wide; peduncles mostly exceeding the leaves; inflorescence capitate, or spicate, dense; flowers violet-purple, about 3″ long; pod oblong, or oval, acuminate or acute at each end, very pubescent, 2½″–3″ long.

Dry soil, southern New England and New York to Michigan, Florida and Kansas. Aug.–Sept.

4. Lespedeza violàcea (L.) Pers. Bush-clover. (Fig. 2195.)

Hedysarum violaceum L. Sp. Pl. 749. 1753.
Lespedeza violacea Pers. Syn. 2: 318. 1807.

Erect or ascending, sparingly pubescent, usually much branched, 1°–3° high. Stipules subulate, 2″–3″ long; petioles shorter than or equalling the leaves; leaflets oval, elliptic or elliptic-oblong, thin, obtuse or retuse at the apex, rounded at the base, 6″–2′ long, appressed-pubescent beneath; peduncles, at least the upper ones, longer than the leaves; inflorescence loose, paniculate; corolla violet-purple, 3″–5″ long; pod ovate or oval, acute, finely and sparingly pubescent, or glabrate, 2″–3″ long.

In dry soil, New England to Florida, west to Minnesota, Kansas, Louisiana and northern Mexico. Aug.–Sept.

5. Lespedeza Stùvei Nutt. Stuve's Bush-clover. (Fig 2196.)

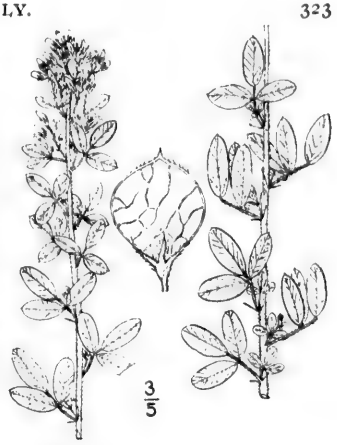
Lespedeza Stuvei Nutt. Gen. 2: 107. 1818.

Erect or ascending, simple and wand-like or sometimes slightly branched, densely velvety or downy pubescent all over, 2°–4° high. Stipules subulate, 2″–3″ long; petioles commonly much shorter than the leaves; leaflets oval, oblong or suborbicular, obtuse or retuse at the apex, narrowed or rounded at the base, 6″–10″ or rarely 15″ long; flowers of both kinds in nearly sessile axillary clusters; corolla violet-purple, 2″–3″ long; pod ovate-oblong to orbicular, acute, or oblong, 2″–3″ long, downy-pubescent.

Dry soil, Long Island to Virginia, west to Michigan and the Indian Territory. Aug.–Sept.

Lespedeza Stùvei neglécta Britton, Mem. Torr. Club, 5: 206. 1894.

Leaflets linear or linear-oblong, obtuse, mucronulate. New Jersey and Pennsylvania to North Carolina, Georgia, Missouri and Texas.

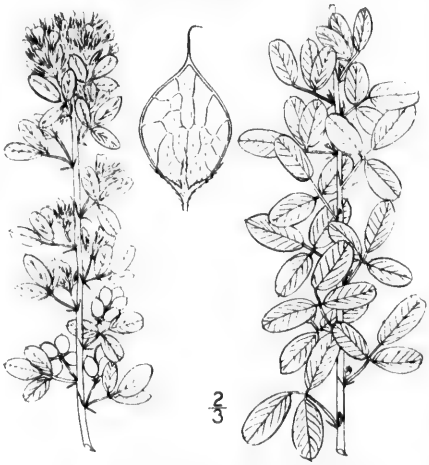


6. Lespedeza frutéscens (L.) Britton. Wand-like Bush-clover. (Fig. 2197.)

Hedysarum frutescens L. Sp. Pl. 748. 1753.
Lespedeza reticulata S. Wats. Bibliog. Index, 1: 233. 1878. Not Pers. 1807.
Lespedeza Stuvei var. *intermedia* S. Wats. in A. Gray, Man. Ed. 6, 147. 1890.
Lespedeza frutescens Britton, Mem. Torr. Club, 5: 205. 1894.

Erect, simple or branched, finely appressed-pubescent or glabrate, 1°–3° high. Stipules subulate, 2″–3″ long; petioles equalling or shorter than the leaves; leaflets oval, oblong or elliptic, obtuse, truncate or retuse at the apex, narrowed or rounded at the base, 6″–18″ long, glabrous and dark green above, paler and pubescent beneath; flowers of both kinds in short-stalked or nearly sessile axillary clusters, generally crowded toward the summit of the stem; corolla violet-purple, 2″–3″ long; pod ovate-oblong, acute, pubescent, about 2″ long.

Dry soil, Massachusetts to Ontario and Michigan, south to Florida, Illinois and Texas. Aug.–Sept.

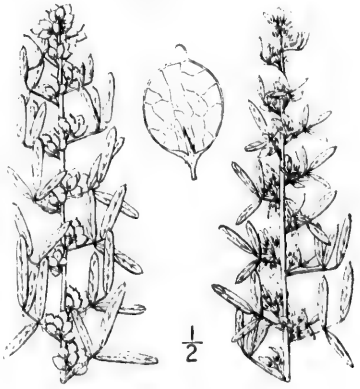


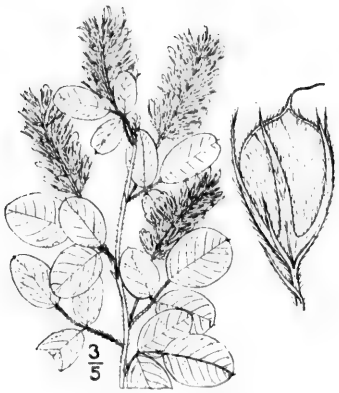
7. Lespedeza Virgínica (L.) Britton. Slender Bush-clover. (Fig. 2198.)

Medicago Virginica L. Sp. Pl. 778. 1753.
Lespedeza violacea var. *angustifolia* T. & G. Fl. N. A. 1: 367. 1840.
Lespedeza Virginica Britton, Trans. N. Y. Acad. Sci. 12: 64. 1893.

Erect, slender, simple and wand-like or branched, resembling the preceding species. Leaflets linear or oblong-linear, 6″–18″ long, 1″–2½″ wide, truncate, obtuse or sometimes acute at the apex, finely pubescent beneath, or glabrate on both surfaces; clusters of both kinds of flowers sessile, or nearly so, crowded in the upper axils; flowers violet-purple, 2″–3″ long; pod ovate, or oval-orbicular, acute, or obtuse, 2″ long; pubescent, or nearly glabrous.

Dry soil, Massachusetts to Minnesota, south to Florida and Texas. Aug.–Sept.





8. Lespedeza hirta (L.) Ell. Hairy Bush-clover. (Fig. 2199.)

Hedysarum hirtum L. Sp. Pl. 748. 1753.
L. polystachya Michx. Fl. Bor. Am. 2: 71. 1803.
Lespedeza hirta Ell. Bot. S. C. & Ga. 2: 207. 1824.

Erect or ascending, rather stout, generally branching above, villous or silky-pubescent, 2°–4° high. Stipules subulate, 1″–2½″ long; petioles shorter than the leaves; leaflets oval, or suborbicular, obtuse at each end, sometimes emarginate at the apex, 6″–2′ long; peduncles elongated, often much exceeding the leaves; heads oblong-cylindric, rather dense, ½′–1½′ long; flowers all complete; corolla yellowish-white or the standard purple spotted, about 3″ long; pod oval, acute, very pubescent, about equalling the calyx-lobes.

Dry soil, Maine and Ontario to Florida, west to Illinois, Minnesota and Louisiana. Aug.–Oct.

Lespedeza hirta oblongifòlia Britton, Trans. N. Y. Acad. Sci. 12: 66. 1893.

Leaves oblong, obtuse at each end, 9″–15″ long, 2″–4″ wide, glabrate above, appressed-pubescent below; peduncles slender; spikes looser, 1′–1½′ long; calyx very pubescent. Pine barrens, Egg Harbor, N. J., and in the Southern States.

9. Lespedeza capitàta Michx. Round-headed Bush-clover. (Fig. 2200.)

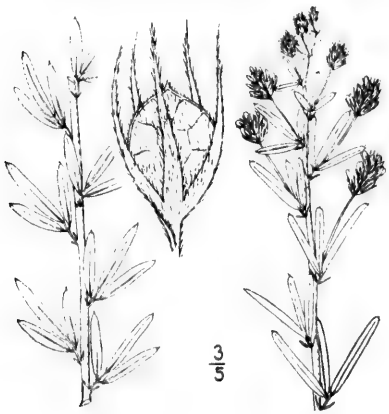
Hedysarum frutescens Willd. Sp. Pl. 3: 1193. 1803. Not L. 1753.
L. capitata Michx. Fl. Bor. Am. 2: 71. 1803.
Lespedeza frutescens Ell. Bot. S. C. 2: 206. 1824.
Lespedeza capitata var. *sericea* H. & A. Comp. Bot. Mag. 1: 23. 1835.

Stiff, erect or ascending, mainly simple and wand-like, silky or silvery pubescent, 2°–5½° high. Stipules subulate; leaves nearly sessile; leaflets oblong or oval, obtuse or acute at each end, 1′–1½′ long, 3″–5″ wide; peduncles much shorter than the leaves, or the dense globose-oblong heads sessile in the upper axils; flowers all complete; corolla yellowish-white, with a purple spot on the standard, 3″ long; pod ovate-oblong, pubescent, about half as long as the calyx-lobes.

Dry fields, Ontario and Maine to Florida, Minnesota, Nebraska and Louisiana. Aug.–Sept.

Lespedeza capitàta longifòlia (DC.) T. & G. Fl. N. A. 1: 368. 1840.
Lespedeza longifolia DC. Prodr. 2: 349. 1825.

Leaflets linear-lanceolate or linear-oblong, sometimes 4′ long. Illinois and Missouri.



10. Lespedeza angustifòlia (Pursh) Ell. Narrow-leaved Bush-clover. (Fig. 2201.)

Lespedeza capitata var. *angustifolia* Pursh, Fl. Am. Sept. 480. 1814.
L. angustifolia Ell. Bot. S. C. & Ga. 2: 206. 1824.

Erect, simple, or branched above, slender, appressed-pubescent, 2°–3° high. Stipules subulate; leaves nearly sessile; leaflets linear or oblong-linear, rarely some of the lower ones lance-linear, 1′–1½′ long, 1″–2″ wide, obtuse, truncate or acutish at the apex; peduncles elongated, usually exceeding the leaves; flowers nearly as in the preceding species; pod ovate-orbicular, shorter than the calyx-lobes.

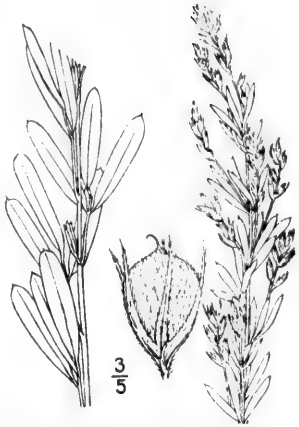
Dry sandy soil, eastern Massachusetts, Long Island, south to Florida, west to Michigan and Louisiana. Aug.–Sept.

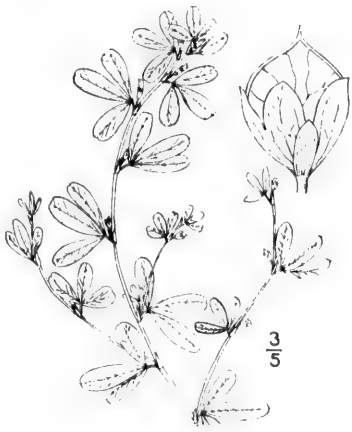
11. Lespedeza leptostàchya Engelm. Prairie Bush-clover. (Fig. 2202.)

Lespedeza leptostachya Engelm.; A. Gray, Proc. Am. Acad. 12: 57. 1876.

Erect, simple or branched, 1°–3° high, silvery-pubescent with appressed hairs. Stipules subulate; petioles shorter than the leaves; leaflets linear, 1′–1½′ long, 1″–2″ wide; spikes slender, interrupted and loosely flowered, on peduncles equalling or exceeding the leaves; corolla as in the preceding species; flowers all complete; pod ovate, pubescent, about 1½″ long, nearly equalling the calyx.

Prairies, Illinois to Iowa, Wisconsin and Minnesota. Aug.–Sept.





12. Lespedeza striàta (Thunb.) H. & A. Japan Clover. (Fig. 2203.)

Hedysarum striatum Thunb. Fl. Jap. 289. 1784.
Lespedeza striata H. & A. Bot. Beechey, 262. 1841.

Annual, diffuse or ascending, branched, tufted, sparingly appressed-pubescent, 6′–12′ long. Stipules ovate, acute or acuminate, 1″–2″ long; petioles much shorter than the leaves; leaflets oblong or oblong-obovate, 4″–9″ long, 1″–4″ wide, obtuse at the apex, narrowed at the base, their margins usually sparingly ciliate; flowers 1–3 together, both petaliferous and apetalous, sessile or nearly so in the axils; corolla pink or purple, about ½″ long; calyx-lobes ovate; pod oval, acute, exceeding the calyx-lobes.

In fields, Virginia to Illinois, Missouri, and very common in the Southern States. Naturalized from eastern Asia. Hoopkoop-plant. July–Aug.

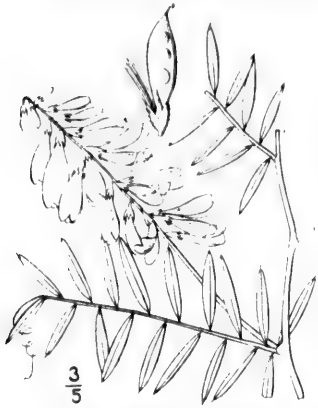
36. VÍCIA L. Sp. Pl. 734. 1753.

Climbing or trailing, herbaceous vines, with pinnate tendril-bearing leaves, half-sagittate or entire stipules, and axillary sessile or racemose, blue violet or yellowish flowers. Calyx-tube somewhat oblique, obtuse at the base, its teeth about equal, or the two upper ones slightly longer. Standard obovate or oblong, emarginate, clawed; wings obliquely oblong, adherent to the shorter oblong curved keel. Stamens diadelphous (9 and 1), or monadelphous below; anthers all alike. Ovary sessile or stipitate; ovules ∞; style very slender, with a tuft or ring of hairs at its summit. Pod flat, dehiscent, 2-valved, continuous between the seeds. [The classical Latin name of the Vetch.]

About 120 species of wide geographic distribution. In addition to the following, about 12 others occur in the southern and western parts of North America.

Flowers racemed or spicate; peduncles elongated.
- Indigenous perennials.
  - Spike-like racemes dense, 1-sided, 15–40-flowered. — 1. *V. Cracca.*
  - Racemes loose, 1–20-flowered.
    - Flowers 7″–10″ long.
      - Leaflets elliptic, or ovate-oblong. — 2. *V. Americana.*
      - Leaflets narrowly linear; western. — 3. *V. linearis.*
    - Flowers 2″–5″ long.
      - Racemes 8–20-flowered; flowers 4″–5″ long. — 4. *V. Caroliniana.*
      - Racemes 1–6-flowered; flowers 2″–4″ long.
        - Leaflets 2–5 pairs, linear, or those of the lower leaves oval or obovate. — 5. *V. micrantha.*
        - Leaflets 4 or 5 pairs, all oval, elliptic or obovate. — 6. *V. Ludoviciana.*
- Introduced annuals; flowers few, 2″–3″ long.
  - Pod glabrous, 3–6-seeded. — 7. *V. tetrasperma.*
  - Pod pubescent, 2-seeded. — 8. *V. hirsuta.*

Flowers sessile or very nearly so, few, axillary.
Flowers 1 or 2 in the axils; annuals.
Leaflets oblong, oval or obovate. 9. *V. sativa.*
Leaflets, except those of lower leaves, linear, or linear-oblong. 10. *V. angustifolia.*
Flowers 2–6 in a short nearly sessile raceme; perennial. 11. *V. Sepium.*



1. Vicia Crácca L. Tufted or Cow Vetch. Blue Vetch. (Fig. 2204.)

Vicia Cracca L. Sp. Pl. 735. 1753.

Perennial, finely pubescent or sometimes glabrate, stems tufted, slender, weak, climbing or trailing, 2°–4° long. Stipules linear, acute, entire, 1″–4″ long; leaves nearly sessile; leaflets 18–24, thin, linear or linear-oblong, obtuse or acutish, mucronate, 8″–10″ long, 1½″–2″ wide; peduncles axillary, shorter than or equalling the leaves; spike-like racemes dense, 1′–4′ long; flowers bluish-purple, 5″–6″ long, reflexed; pod short-stalked, glabrous, 9″–12″ long, about 3″ wide, 5–8-seeded.

In dry soil, Newfoundland to British Columbia, south to New York, New Jersey, Kentucky and Iowa. Also in Europe and Asia. Tinegrass. Cat-peas. June–Aug.

2. Vicia Americàna Muhl. American Vetch. Pea Vine. (Fig. 2205.)

Vicia Americana Muhl.; Willd. Sp. Pl. 3: 1096. 1803.

Perennial, glabrous or with some appressed pubescence, trailing or climbing, 2°–3° long. Leaves nearly sessile; stipules broad, foliaceous, triangular-ovate, sharply toothed, 2″–5″ long; leaflets 8–14, elliptic, ovate or oblong, obtuse or sometimes emarginate and mucronulate at the apex, rounded at the base, 8″–18″ long, 3″–7″ wide; peduncles usually shorter than the leaves; racemes loose, 3–9-flowered; flowers bluish-purple, 8″–9″ long, spreading; pod short-stalked, glabrous, 1′–1¼′ long, 4–7-seeded.

In moist ground, New Brunswick to Manitoba and British Columbia, south to Virginia, Kentucky and Nevada. Leaflets of lower leaves sometimes narrow. Ascends to 3500 ft. in Virginia. May–Aug.

Vicia Americàna truncàta (Nutt.) Brewer, in Brew. & Wats. Bot. Cal. 1: 158. 1876.

Vicia truncata Nutt.; T. & G. Fl. N. A. 1: 270. 1838.

Leaflets thick, oblong or obovate, truncate and dentate at the apex. Nebraska to California, north to Vancouver.

3 Vicia lineàris (Nutt.) Greene. Narrow-leaved American Vetch. (Fig. 2206.)

Lathyrus linearis Nutt.; T. & G. Fl. N. A. 1: 276. 1838.
Vicia Americana var. *linearis* S. Wats. Proc. Am. 11: 134. 1876.
Vicia linearis Greene, Fl. Francis. 3. 1891.

Perennial, glabrous or nearly so, stems weak, often zigzag, 1°–2° long. Leaflets 4–7 pairs, narrowly linear to linear-oblong, 9″–18″ long, ¼″–2″ wide, rather thick, acute or obtusish, the apex not toothed, mucronate; stipules 2″–4″ long, half-sagittate, acuminate, their bases prolonged, sometimes dentate; peduncles shorter than the leaves, or about equalling them; racemes loose, 2–6-flowered; flowers purple or purplish, about 9″ long; pod about 1′ long, 3″ wide or rather more, glabrous, short-stalked.

In dry soil, Northwest Territory to British Columbia, Kansas, New Mexico and California. May–Aug.

4. Vicia Caroliniàna Walt. Carolina Vetch. (Fig. 2207.)

Vicia Caroliniana Walt. Fl. Car. 182. 1788.
Vicia parviflora Michx. Fl. Bor. Am. 2: 69. 1803.

Perennial, glabrous or nearly so, trailing or climbing, slender, 2°–3° long. Stipules linear or oblong, entire, 2″–3″ long; leaves short-petioled; leaflets 8–18, oblong or linear-oblong, entire obtuse or emarginate, or sometimes acutish and mucronate, 6″–10″ long, 1½″–5″ wide; peduncles equalling or shorter than the leaves; racemes loosely 8–20-flowered; flowers nearly white, 4″–5″ long, the keel bluish-tipped; pod glabrous, 8″–14″ long, short-stalked, 5–8-seeded.

River-banks and cliffs, Ontario to Minnesota, south to Georgia, Kentucky, and Kansas (according to S. Watson). Ascends to 3500 feet in Virginia. May-July.

6. Vicia Ludoviciàna Nutt. Louisiana Vetch. (Fig. 2209.)

Vicia Ludoviciana Nutt.; T. & G. Fl. N. A. 1: 271. 1838.

Perennial, glabrous, or the young parts pubescent; stem rather stout, angled, 1½°–3° long. Leaflets 4 or 5 pairs, elliptic, oval or obovate, thin, 6″–10″ long, 2″–4″ wide, obtuse or emarginate; stipules very narrow, rarely over 3″ long, linear, or half-sagittate; peduncles shorter than the leaves, or about equalling them, 2–6-flowered (rarely 1-flowered); flowers 3″–4″ long, bluish; pod 1′ long, or rather more, 3″–5″ wide, glabrous, 4–6-seeded, the seeds compressed.

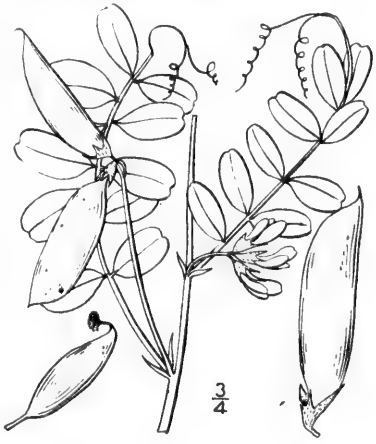
Kansas (?), Texas and Louisiana to Florida. April-May.

5. Vicia micrántha Nutt. Small-flowered Vetch. (Fig. 2208.)

Vicia micrantha Nutt.; T. & G. Fl. N. A. 1: 271. 1838.

Perennial (or sometimes annual?) glabrous, stems very slender, 1°–2° long. Leaflets 2–5 pairs, narrowly linear to linear-oblong, thin, ½′–1½′ long, 1″–2″ wide, obtuse, acutish or emarginate, or those of the lower leaves obovate, oval, or even obcordate, usually shorter; peduncles 4″–15″ long, 1–2-flowered; flowers 2″–3″ long, purplish; pod slightly pubescent, or glabrous, about 1′ long, 2½″ wide, 6–12-seeded; seeds compressed.

On prairies and in thickets, Missouri to Tennessee, Alabama and Texas. April-May.



7. Vicia tetraspérma (L.) Moench. Slender Vetch. Smooth or Lentil Tare. (Fig. 2210.)

Ervum tetraspermum L. Sp. Pl. 738. 1753.
Vicia tetrasperma Moench, Meth. 148. 1794.

Annual, glabrous or nearly so, weak, slender, 6′-24′ long. Stipules linear, long-auriculate at the base; leaves short-petioled; leaflets thin, 6–12, linear or linear-oblong, obtuse or acutish, commonly mucronulate, 6″–8″ long; peduncles filiform, equalling or shorter than the leaves, 1–6-flowered; flowers pale blue or purplish, 2″–3″ long; pod 4″–6″ long, glabrous, 3–6-seeded.

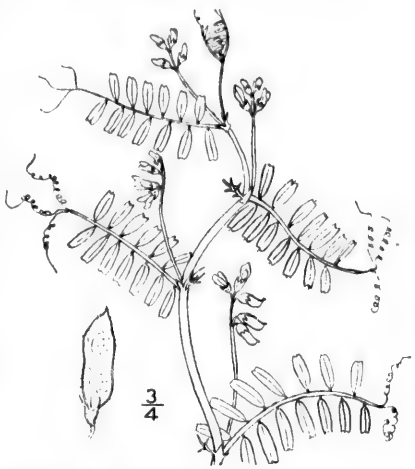
In meadows and waste places, Nova Scotia and Ontario to Virginia. Naturalized from Europe. Native also of northern Asia. June–Sept.

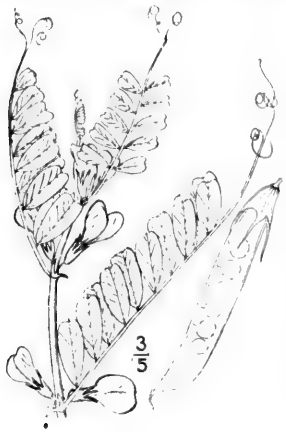
8. Vicia hirsùta (L.) Koch. Hairy Vetch or Tare. (Fig. 2211.)

Ervum hirsutum L. Sp. Pl. 738. 1753.
Vicia Milchelli Raf. Prec. Decouv. 37. 1814.
Vicia hirsuta Koch, Syn. Fl. Germ. 191. 1837.

Sparingly pubescent, or glabrous, annual, much resembling the preceding species. Stipules linear, long-auriculate and sometimes toothed; leaves nearly sessile; leaflets 12–14, oblong or linear, obtuse, emarginate or truncate, mucronulate, 4″–8″ long, narrowed at the base; peduncles slender, mainly shorter than the leaves, 2–6-flowered; flowers pale purplish blue, about 1½″ long; pod oblong, pubescent, 4″–6″ long, 2-seeded.

In fields and waste places, Virginia to Ohio and New Brunswick. Naturalized from Europe. Native also of Asia. Called also Tine-tare, Strangle-tare. May–Sept.





9. Vicia sativa L. Common Vetch or Tare. Pebble-vetch. (Fig. 2212.)

Vicia sativa L. Sp. Pl. 736. 1753.

Annual, pubescent or glabrate, spreading, ascending or climbing, 1°–3° long. Stipules broad, generally sharply toothed; leaves short-petioled; leaflets 8–14, obovate, oblong or oblanceolate, obtuse, truncate or retuse and mucronate at the apex, narrowed at the base, 9″–15″ long, 2″–4″ wide; flowers 1 or 2 in the axils, sessile or short-peduncled, bluish-purple, 9″–12″ long; calyx-teeth about as long as the tube; pod linear-oblong, glabrous, 1½′–3′ long, about 4″ wide, 5–10-seeded.

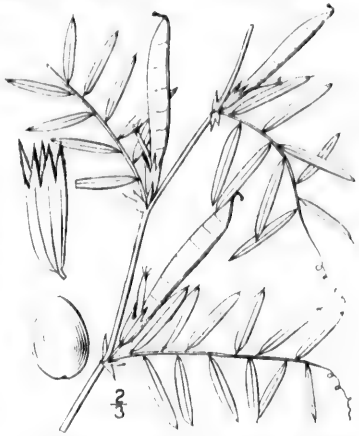
In fields and waste places, frequent or occasional throughout our area, in the southern States and on the Pacific Coast. Adventive from Europe, where it is extensively cultivated for fodder. May–Aug.

10. Vicia angustifòlia Roth. Smaller Common Vetch. (Fig. 2213.)

Vicia angustifolia Roth, Tent. Fl. Germ. 1: 310. 1788.
Vicia sativa var. *angustifolia* Ser. in DC. Prodr. 2: 361. 1825.

Annual, glabrous or puberulent; stem slender, 1°–2° long. Stipules mostly half-sagittate, toothed, or entire; leaves short-petioled, or nearly sessile; leaflets 8–16, linear, lanceolate, or oblanceolate, 4″–18″ long, 1″–2″ wide, acute, obtuse, truncate or emarginate at the apex, mucronulate, those of the lower leaves commonly obovate, broader and shorter; flowers 1 or 2 in the upper axils, purple, 6″–8″ long; calyx-teeth as long as the tube or shorter; pod linear, glabrous, 1′–2′ long.

In fields and waste places, Nova Scotia to Florida, mostly near the coast. Naturalized from Europe. Widely distributed as a weed in temperate regions. April–July.



11. Vicia Sèpium L. Bush Vetch. Wild Tare. (Fig. 2214.)

Vicia Sepium L. Sp. Pl. 737. 1753.

Perennial by slender stolons, minutely pubescent; stem slender, 2°–3° long. Leaves short-petioled, 2′–6′ long; leaflets 10–18, ovate or oval, 6″–12″ long, 3″–7″ wide, emarginate or truncate at the apex, mucronulate, thin; stipules half-sagittate, 5″ long or less; racemes in 1 or more of the upper axils, 2–6-flowered, ½′–1′ long, nearly sessile; flowers very short-pedicelled, pale purple, 6″–10″ long; calyx-teeth unequal, shorter than the tube; pod 10″–15″ long, about 3″ wide, glabrous.

Railway embankment near Hamilton, Ontario. Adventive or fugitive from Europe. Native also of Asia. Called also Crow-peas. May–July.

Ervum Lens L., the Lentil, distinguished from all our species of *Vicia* by its elongated calyx-lobes and oval, 1–2-seeded pod, is collected occasionally as a waif, not established.

37. LÁTHYRUS L. Sp. Pl. 729. 1753.

Herbaceous vines, rarely erect herbs, with pinnate mostly tendril-bearing leaves, and racemose or sometimes solitary flowers. Calyx oblique or gibbous at the base, its teeth nearly equal or the upper ones somewhat shorter than the lower. Corolla nearly as in *Vicia*, but commonly larger. Stamens diadelphous (9 and 1), or monadelphous below. Ovary sessile or stalked; ovules generally numerous; style curved, flattened, hairy along its inner side. Pod flat, or sometimes terete, 2-valved, dehiscent, continuous between the seeds. [Ancient Greek name of some leguminous plant.]

About 110 species, natives of the northern hemisphere and of South America. Besides the following, about 25 others occur in the southern and western parts of North America.

Leaflets 3–6 pairs; flowers purple.
  Stipules broad, foliaceous; plant of the seashore and the Great Lakes. — 1. *L. maritimus.*
  Stipules half-sagittate or small, or wanting; inland plants.
    Plants climbing or trailing; stipules present; pod sessile.
      Leaflets ovate or oval, large; flowers 10–20. — 2. *L. venosus.*
      Leaflets linear, oblong or oval, smaller; flowers 2–6.
        Leaflets linear or linear-oblong; stem winged. — 3. *L. palustris.*
        Leaflets oblong or oval; stem wingless. — 4. *L. myrtifolius.*
    Plants mainly erect; stipules often wanting; pod stipitate.
      Leaflets lanceolate or oblong. — 5. *L. decaphyllus.*
      Leaflets linear. — 6. *L. ornatus.*
Leaflets 3–5 pairs; stipules foliaceous; flowers yellowish-white. — 7. *L. ochroleucus.*
Leaflets 1 pair; stipules foliaceous; flowers bright yellow. — 8. *L. pratensis.*

1. Lathyrus maritimus (L.) Bigel. Beach Pea. Sea or Seaside Pea. (Fig. 2215.)

Pisum maritimum L. Sp. Pl. 727. 1753.

Lathyrus maritimus Bigel. Fl. Bost. Ed. 2, 268. 1824.

Perennial, glabrous or nearly so, stout, somewhat fleshy, slightly glaucous; stems angled, decumbent, 1°–2° long. Stipules large and foliaceous, ovate, half-hastate, acute, 1′–2′ long; leaves nearly sessile; leaflets 3–6 pairs, oblong, oval or obovate, obtusish and mucronulate at the apex, mainly narrowed at the base, somewhat larger than the stipules; tendrils branched; peduncles shorter than the leaves; flowers 6–10, 9″–12″ long, purple; calyx-teeth often ciliate; pod sessile, linear-oblong, nearly glabrous, veined, 1½′–3′ long, 4″–5″ wide.

Sea-beaches, New Jersey to arctic America, shores of the Great Lakes, and on the Pacific coast. Also in northern Europe and Asia. May–Aug. Sometimes blooming again late in autumn. Also called Sea-side Everlasting Pea.

2. Lathyrus venòsus Muhl. Veiny Pea. (Fig. 2216.)

Lathyrus venosus Muhl.; Willd. Sp. Pl. 3: 1092. 1803.

Finely pubescent or glabrous, perennial, ascending, climbing or decumbent, 2°–3° long. Stems strongly 4-angled; stipules lanceolate, half-sagittate, acute or acuminate, 4″–12″ long; leaves petioled; leaflets 4–7 pairs, ovate or oval, obtuse or acute and mucronulate at the apex, mostly rounded at the base, 1′–2′ long; tendrils branched; peduncles shorter than the leaves; flowers purple, 6″–8″ long; calyx pubescent or glabrous; pod linear, sessile, glabrous, veined, 1½′–3′ long, about 3″ wide.

River shores and banks, western New Jersey and Pennsylvania to Indiana and Assiniboia, south to Georgia, Louisiana and Kansas. Ascends to 3500 feet in Virginia. Leaflets often strongly reticulated. May–July.

3. Lathyrus palústris L. Marsh Vetchling. (Fig. 2217.)

Lathyrus palustris L. Sp. Pl. 733. 1753.

Perennial, glabrous or sparingly pubescent; stems angled and winged, slender, 1°–3° long; stipules half-sagittate, lanceolate, linear, or ovate-lanceolate, 5″–10″ long, 1½″–2½″ wide; leaflets 2–4 pairs, lanceolate, oblong, or linear-oblong, acute or obtusish and mucronate at the apex, narrowed or rounded at the base, 1′–2½′ long, 2″–5″ wide; tendrils branched; peduncles generally about equalling the leaves, 2-6-flowered; flowers purple, 5″–7″ long; pod linear, sessile, slightly pubescent, or glabrous, 1½′–2½′ long, about 3″ wide.

In moist or wet grounds, Labrador to Alaska, Massachusetts, New York and British Columbia. Also in Europe and Asia. May–Aug.

4. Lathyrus myrtifòlius Muhl. Myrtle-leaved Marsh Pea. (Fig. 2218.)

Lathyrus myrtifolius Muhl.; Willd. Sp. Pl. 3: 1091. 1803.
Lathyrus palustris var. *myrtifolius* A. Gray, Man. Ed. 2, 104. 1856.

Perennial, usually quite glabrous; stems slender, angled, not winged, 1°–3° long, weak. Stipules obliquely ovate, or half-sagittate, 6″–12″ long, often 4″–6″ wide and toothed; leaflets 2–4 pairs, mostly 3 pairs, oval, oval-oblong or ovate, mucronate and acute or obtuse at the apex, narrowed at the base, 9″–2′ long, 3″–7″ wide, rather thin; tendrils branched; peduncles equalling the leaves, or shorter, 3–9-flowered; flowers purple or purplish, similar to those of the preceding species; pod linear, glabrous, sessile, 1′–2′ long, 3½″ wide or less.

In moist or wet grounds, New Brunswick to Manitoba, south to North Carolina and Tennessee. May–July.

Lathyrus myrtifòlius macránthus White, Bull. Torr. Club, 21: 448. 1894.

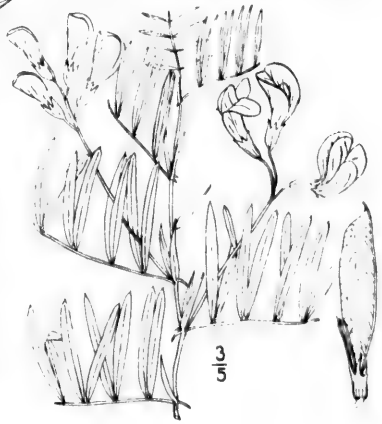
Pubescent; stipules larger, often half as large as the leaflets; flowers 10″–12″ long. Maine.

5. Lathyrus decaphýllus Pursh. Prairie Vetchling. (Fig. 2219.)

L. decaphyllus Pursh, Fl. Am. Sept. 471. 1814.
Lathyrus polymorphus Nutt. Gen. 2: 96. 1818.

Perennial, erect or ascending, glabrous, or finely pubescent, 6′–18′ high. Stems angled; stipules half-sagittate, acuminate, 4″–12″ long, 1″–3″ wide; leaves petioled; leaflets 3–7 pairs, obtuse or acute and mucronulate at the apex, narrowed at the base, thick, conspicuously reticulated, 1′–2½′ long, 3″–8″ wide; stipules when present, branched, but often wanting; peduncles usually shorter than the leaves; flowers purple, 1′–1½′ long, showy; pod linear, stipitate; seeds with a narrow stalk and short hilum.

Kansas (?), Idaho and Colorado to Arizona and New Mexico. March–July.



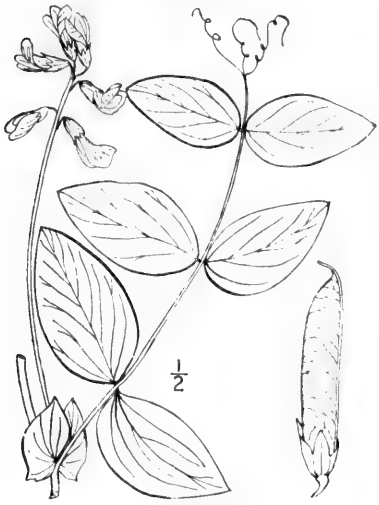
6. Lathyrus ornàtus Nutt. Showy Vetchling. (Fig. 2220.)

Lathyrus ornatus Nutt.; T. & G. Fl. N. A. 1: 277. 1838.

Closely resembling the preceding species, but generally lower, often less than 1° high. Stipules lanceolate or linear, 2″–10″ long; leaflets narrow, linear or linear-oblong, acute and mucronate, 4″–12″ long, 1″–2″ wide; tendrils commonly wanting; flowers purple, showy, 1′–1½′ long; pod linear, stipitate; seeds with a broad stalk and long hilum.

Indian Territory to Kansas and Dakota, west to Colorado and Utah. May–June.

7. Lathyrus ochroleùcus Hook. Cream-colored Vetchling. (Fig. 2221.)



Lathyrus ochroleucus Hook. Fl. Bor. Am. 1: 159. 1833.

Lathyrus glaucifolius Beck, Bot. 90. 1833.

Perennial, slender, glabrous and slightly glaucous; stem somewhat angled, climbing or trailing, 1°–2½° long; stipules broad, foliaceous, half-ovate and half-cordate, 8″–12″ long; leaves petioled; leaflets 3–5 pairs, thin, pale beneath, ovate or broadly oval, acute or obtusish at the apex, rounded at the base, 1′–2′ long; tendrils branched; peduncles shorter than the leaves; flowers 5–10, yellowish white, 7″–9″ long; pod oblong-linear, sessile, glabrous, 1′–2′ long.

On river-banks and hillsides, New Brunswick, N. J. (according to Beck), Pennsylvania to New England, Quebec and arctic America, west to Iowa, Dakota, Washington and British Columbia. May–July.

8. Lathyrus praténsis L. Meadow Pea. Yellow Vetchling. (Fig. 2222.)

Lathyrus pratensis L. Sp. Pl. 733. 1753.

Perennial, weak, slender, glabrous or sparingly pubescent, climbing or straggling, 1°–3° long. Stems angled, branching; stipules lanolate, foliaceous, half-sagittate, acuminate, 6″–12″ long, nearly as large as the leaflets; leaves sessile; leaflets a single pair, oblong or linear-oblong, acute or acutish, mucronulate, 1′–1½′ long, 2″–4″ wide; tendrils simple or branched; racemes exceeding the leaves; flowers 6–12, yellow, 6″–8″ long; pods linear, glabrous, 1′–1½′ long.

In waste places, Maine, New York, Massachusetts and Ontario. Also throughout Europe and Russian Asia. English names Angleberries, Craw-peas, Mouse-pea, Tom Thumb, Yellow Tar-fitch. June–Aug.

38. BRADBÙRYA Raf. Fl. Ludov. 104. 1817.

[Centrosema Benth. Ann. Mus. Wien, 2: 117. 1838.]

Slender twining or prostrate vines, with pinnately 3-foliolate leaves (rarely 5–7-foliolate), persistent stipules, and large showy axillary racemose or solitary flowers. Calyx campanulate, its teeth or lobes nearly equal; standard orbicular, nearly flat, spurred on the back near its base, clawed; wings obovate, curved; keel curved. Stamens more or less diadelphous (9 and 1); anthers all alike. Style incurved, bearded at the apex around the stigma. Pod linear, flattened, nearly sessile, partially septate between the seeds, 2-valved, the valves thick-edged, longitudinally finely nerved along their margins. [In honor of John Bradbury who travelled in America early in the century.]

About 30 species, natives of America. Besides the following, another occurs in the Southern States.

1. Bradburya Virginiàna (L.) Kuntze. Spurred Butterfly-Pea. (Fig. 2223.)

Clitoria Virginiana L. Sp. Pl. 753. 1753.
Centrosema Virginianum Benth. Ann. Mus Wien, 2: 120. 1838.
Bradburya Virginiana Kuntze, Rev. Gen. Pl. 164. 1891.

Perennial, climbing or trailing, somewhat branched, finely rough-pubescent, 2°–4° long. Stipules linear, acute, about 2″ long; petioles usually shorter than the leaves; leaflets 3, ovate, or oblong-lanceolate, stipellate, acute and mucronulate or blunt, rounded at the base, reticulate-veined, 1′–2′ long, 4″–12″ wide; peduncles about equalling the petioles, 1–4-flowered; bracts ovate, acute, finely striate; flowers short-pedicelled, 1′–1½′ long; corolla violet; calyx lobes linear; pod linear, 4′–5′ long, about 2″ wide, long-acuminate, its margins much thickened.

Dry sandy soil, New Jersey to Florida, west to Arkansas and Texas. Extends throughout tropical America to Bolivia. July–Aug.

39. CLITÒRIA L. Sp. Pl. 753. 1753.

Woody vines, or erect or climbing herbs, with pinnately 3-foliolate (sometimes 5–9-foliolate) leaves, persistent stipules, and large showy axillary solitary or racemose flowers. Calyx tubular, 5-toothed, the 2 upper teeth more or less united. Standard large, erect, retuse, narrowed at the base, not spurred; wings oblong, curved; keel acute, shorter than the wings. Stamens more or less monadelphous; anthers all alike. Ovary stipitate; style elongated, incurved, hairy along the inner side. Pod stalked in the calyx, linear, or linear-oblong, flattened, 2-valved, partly septate between the seeds.

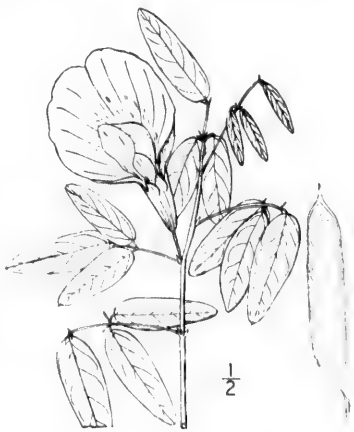
About 30 species, natives of warm and temperate regions. The following is the only one known to inhabit North America.

1. Clitoria Mariàna L. Butterfly-Pea. (Fig. 2224.)

Clitoria Mariana L. Sp. Pl. 753. 1753.

Erect or ascending, sometimes twining, glabrous or nearly so, 1°–3° high. Stipules ovate-lanceolate, acute, 1″–2″ long; petioles usually shorter than the leaves; leaflets stipellate, ovate-lanceolate or oblong-lanceolate, obtuse, mucronate, 1′–2′ long, 4″–12″ wide; peduncles short, 1–3-flowered; bracts lanceolate, striate, deciduous; flowers about 2′ long, very showy; calyx tubular, 6″–8″ long, its teeth ovate, acute; corolla pale blue; pods linear-oblong, acute, about 1′ long and 3″ wide.

Dry soil, Snake Hill, N. J., south to Florida, west to Missouri and Texas. Formerly at Brooklyn, N. Y. June July.



40. FALCÀTA Gmel. in L. Syst. Nat. Ed. 13, 2: 1131. 1796.

[AMPHICARPA Ell. Journ. Acad. Phil. 1: 372. 1817.]

Twining perennial vines, with pinnately 3-foliolate leaves, small white or violet flowers in axillary racemes, and also solitary apetalous fertile flowers in the lower axils or on the slender creeping branches from the base. Calyx of the petaliferous flowers tubular, 4–5-toothed. Standard obovate, erect, folded around the other petals; wings oblong, curved, adherent to the incurved obtuse keel. Stamens diadelphous (9 and 1); anthers all alike,

Style filiform, not bearded. Pods from the upper flowers linear-oblong, several-seeded, 2-valved, those from the lower obovoid, fleshy, mainly 1-seeded. [Latin, referring to the curved keel of the corolla.]

About 7 species, natives of North America, eastern Asia and the Himalayas. Only the following are known in North America.

Leaves thin; bracts small; plant pubescent or glabrate.	1. *F. comosa.*
Leaves firm; bracts large; plant villous-brown-pubescent.	2. *F. Pitcheri.*

1. **Falcata comòsa** (L.) Kuntze. Wild or Hog Pea-nut. (Fig. 2225.)

Glycine comosa L. Sp. Pl. 754. 1753.
Glycine monoica L. Sp. Pl. Ed. 2, 1023. 1763.
Amphicarpa monoica Ell. Journ. Acad. Phil. 1 373. 1817.
Falcata comosa Kuntze, Rev. Gen. Pl. 182. 1891.

Slender, simple or sparingly branched, climbing, pubescent or glabrate, 1°–8° long. Stipules oblong or ovate, 2″ long, striate; leaflets broadly ovate or rhombic-ovate, acute at the apex, rounded at the base, the lower inequilateral, 1′–3′ long; racemes of petaliferous flowers mainly simple; bracts small, ovate, obtuse; flowers purplish or white, 6″–7″ long; pedicels equalling or exceeding the bracts; pods of the petaliferous flowers about 1′ long, 3″ wide, pubescent, especially along the margins.

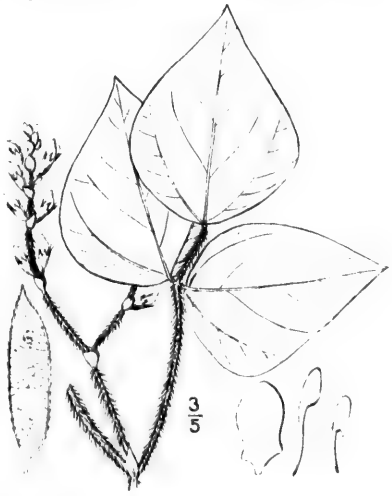
Moist thickets, New Brunswick to Florida, west to Lake Superior, Nebraska and Louisiana. Aug.–Sept.

2. **Falcata Pitcheri** (T. & G.) Kuntze. Pitcher's Hog Pea-nut. (Fig. 2226.)

Amphicarpaea Pitcheri T. & G. Fl. N. A. 1: 292. 1838.
Falcata Pitcheri Kuntze, Rev. Gen. Pl. 182. 1891.

Similar to the preceding but generally stouter, villous-pubescent throughout with reflexed brown hairs. Leaflets larger and thicker, sometimes 4′ long; pedicels mostly shorter than the nearly orbicular canescent bracts; ovary and pods of the petaliferous flowers pubescent throughout, subterranean fruit less abundantly produced than in *F. comosa*; calyx larger.

Moist thickets, western New York to Nebraska, south to Tennessee and Texas. Perhaps intergrades with the preceding species. Aug.–Sept.



41. **ÀPIOS** Moench, Meth. 165. 1794.

Twining perennial vines, with pinnately 3–7-foliolate leaves, small stipules and rather large brownish-purple or red flowers, mainly in axillary racemes or panicles. Calyx campanulate, somewhat 2-lipped, the 2 lateral teeth very small, the 2 upper united and short, the lower one long and acute. Standard ovate, or orbicular, reflexed. Wings obliquely obovate, adherent to the elongated incurved at length twisted keel. Stamens diadelphous (9 and 1); anthers all alike; ovary nearly sessile; ovules ∞; style slender. Pod linear, straight or slightly curved, compressed, 2-valved, many-seeded. Rootstocks usually tuberous. [Greek, pear, from the shape of the tubers.]

Four known species, 1 of eastern North America, 2 of China and 1 of the Himalayas.

1. **Apios Àpios** (L.) MacM. Ground-nut. (Fig. 2227.)

Glycine Apios L. Sp. Pl. 753. 1753.
Apios tuberosa Moench, Meth. 168. 1794.
Apios Apios MacM. Bull. Torr. Club, **19**: 15. 1892.

Slender, pubescent or glabrate, climbing over bushes to a height of several feet. Rootstock tuberous; stipules subulate, 1″–2″ long, deciduous; leaves petioled; leaflets 5–7 (rarely 3), ovate or ovate-lanceolate, acute or acutish at the apex, rounded at the base, 1′–3′ long; racemes axillary, often compound; peduncles shorter than the leaves; flowers numerous, brownish purple, odorous, about 6″ long; rachis of the inflorescence knobby; pod linear, straight or slightly curved, pointed, 2′–4½′ long, about 2½″ wide, many-seeded, its valves rather coriaceous.

In moist ground, New Brunswick to Florida, west to western Ontario, Minnesota, Kansas and Louisiana. Stem with milky juice; tubers edible. July–Sept.

42. GALÁCTIA P. Br. Civ. & Nat. Hist. Jamaica, 298. 1756.

Prostrate or climbing perennial vines (sometimes erect and shrubby), mainly with pinnately 3-foliolate leaves, small and deciduous stipules, and purple or violet axillary racemose flowers. Calyx 4-lobed, bracteolate, the lobes acute, often as long as the tube. Standard orbicular or obovate. Wings narrow, obovate, adherent to the narrow, nearly straight keel. Stamens diadelphous or nearly so (9 and 1); anthers all alike. Ovary nearly sessile; ovules ∞; style filiform, not bearded. Pod linear, straight or slightly curved, usually flattened, 2-valved, several-seeded. Fleshy few-seeded pods are sometimes produced from subterranean apetalous flowers. [Greek, milk-yielding, many of the species having milky sap.]

About 50 species, natives of warm and temperate regions, most abundant in America. Besides the following, about 15 others occur in the southern and southwestern states.

Nearly glabrous throughout; pods slightly pubescent. 1. *G. regularis.*
Finely downy-pubescent; pods very downy. 2. *G. volubilis.*

1. **Galactia regulàris** (L.) B.S.P. Milk Pea. (Fig. 2228.)

Dolichos regularis L. Sp. Pl. 726. 1753.
Galactia glabella Michx. Fl. Bor. Am. 2:62. 1803.
Galactia regularis B.S.P. Prel. Cat. N.Y. 14. 1888.

Prostrate, glabrous or sparingly appressed-pubescent; stems matted, usually branching, 1°–2° long. Stipules minute, deciduous; petioles shorter than the leaves; leaflets elliptic or ovate-oblong, obtuse and often emarginate at the apex, rounded or slightly cordate at the base, ½′–1½′ long, 4″–9″ wide. Peduncles longer than the petioles and generally exceeding the leaves, erect, 4–10-flowered; racemes loose or dense; pedicels about 1½″ long; flowers reddish-purple, 6″–8″ long; pods linear, straight, or slightly curved, slightly pubescent, 1′–1½′ long, 2″ wide, 4–7-seeded.

In dry sandy soil, southeastern New York, Pennsylvania, pine barrens of New Jersey, south to Florida and Mississippi. July–Aug.

2. Galactia volúbilis (L.) Britton. Downy Milk Pea. (Fig. 2229.)

Hedysarum volubile L. Sp. Pl. 750. 1753.
Galactia mollis Nutt. Gen. 2: 117. 1818. Not Michx. 1803.
Galactia pilosa Ell. Bot. S. C. & Ga. 2: 238. 1824. Not Nutt. 1818.
Galactia volubilis Britton, Mem. Torr. Club, 5: 208. 1894.

Finely downy-pubescent all over, similar in general aspect to the preceding species. Leaflets ovate, elliptic, or oval, obtuse or acutish, sometimes emarginate at the apex, rounded or slightly cordate at the base, downy beneath, usually with some appressed pubescence above, ¼′–1½′ long, 5″–12″ wide; peduncles sometimes elongated but variable in length; racemes rather loose; flowers purplish, about 6″ long; pod linear, 1′–1¼′ long, 2″ wide, densely and finely downy-pubescent.

In dry soil, New York Island; Flushing, Long Island, south to Florida, west to Pennsylvania, Kentucky and Texas. June–July.

43. RHYNCHÒSIA Lour. Fl. Cochin. 562. 1793.

Perennial twining trailing or erect herbs, with pinnately 1–3-foliolate leaves, and yellow mostly axillary and racemose flowers. Leaflets generally punctate with resinous dots, not stipellate. Calyx 4–5-lobed, somewhat 2-lipped. Standard obovate or orbicular, spreading or reflexed. Wings narrow. Keel incurved at the apex or falcate. Stamens diadelphous (9 and 1). Ovary nearly sessile; ovules 2, rarely 1; style filiform. Pod flat, oblong or obliquely orbicular, 2-valved, 1–2-seeded. [Greek, beak, from the beak-like keel of the corolla.]

About 100 species, natives of warm and temperate regions. In addition to the following, some 9 others occur in the southern States.

Leaflets 3.
Stem twining or trailing.
Racemes shorter than the leaves; flowers 3″–4″ long. 1. *R. tomentosa.*
Racemes longer than the leaves; flowers about 6″ long. 2. *R. latifolia.*
Stem erect, 1°–2½° high. 3. *R. erecta.*
Leaflets solitary, very broad; plants low, 3′–9′ high. 4. *R. simplicifolia.*

1. Rhynchosia tomentòsa (L.) H. & A. Twining Rhynchosia. (Fig. 2230.)

Glycine tomentosa L. Sp. Pl. 754. 1753.
Rhynchosia tomentosa var. *volubilis* T. & G. Fl. N. A. 1: 285. 1838.
Rhynchosia tomentosa H. & A. Comp. Bot. Mag. 1: 23. 1835.

Trailing or twining, more or less pubescent with spreading hairs, simple or branched, 1°–3° long. Stipules ovate, acute, 2″–4″ long, sometimes wanting; petioles shorter than the leaves; leaflets 3, or the lowest leaves 1-foliolate, ovate, orbicular or broader than long, obtuse but generally pointed, 1′–2′ long; racemes short-peduncled or sessile, 2–8-flowered; flowers 3″–4″ long; calyx deeply 4-parted, the upper lobe 2-cleft; pod oblong, acute, pubescent, 8″–9″ long, about 3″ wide.

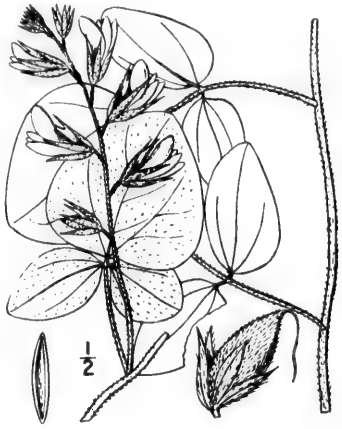
In dry sandy soil, Virginia to Florida, west to Texas. May–July.

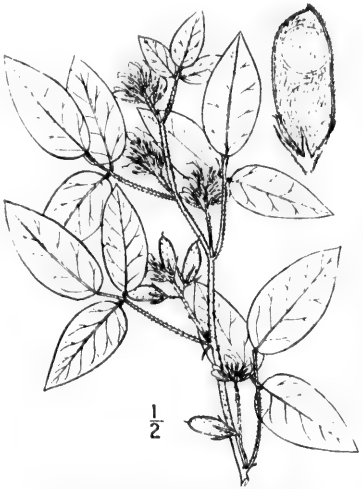
2. Rhynchosia latifòlia Nutt. Prairie Rhynchosia. (Fig. 2231.)

Rhynchosia latifolia Nutt.; T. & G. Fl. N. A. 1: 285. 1838.

Softly pubescent, stem angled, trailing or climbing, sometimes 5° long, with a few long branches. Stipules lanceolate, small, or wanting; petioles 1′–3′ long; leaflets 3, broadly ovate, or somewhat rhomboid, or the end one orbicular, 1′–3′ long, mostly obtuse; racemes elongated, exceeding the leaves, sometimes 1° long in fruit, many-flowered; pedicels 1″–2″ long; calyx about 6″ long, very deeply parted, the segments narrowly lanceolate, acuminate; corolla little longer than the calyx; pod oblong, acute, very pubescent, about 1′ long.

In dry soil, Missouri to Louisiana and Texas. May-June.





3. Rhynchosia erécta (Walt.) DC. Erect Rhynchosia. (Fig. 2232.)

Trifolium erectum Walt. Fl. Car. 184. 1788.
Rhynchosia erecta DC. Prodr. 2: 384. 1825.
Rhynchosia tomentosa var. *erecta* T. & G. Fl. N. A. 1: 285. 1838.

Erect, rather stout, simple or slightly branched, velvety-pubescent or tomentose, 1°–2½° high. Stipules linear-lanceolate, acuminate, 2″–3″ long; petioles shorter than or equalling the leaves; leaflets 3, oval, ovate or slightly obovate, thick, densely tomentose, especially beneath, obtuse or acute, 1′–2′ long; racemes 5–15-flowered, sessile or short-peduncled; flowers 3″–5″ long; pod oblong, pubescent, 6″–8″ long, about 3″ wide.

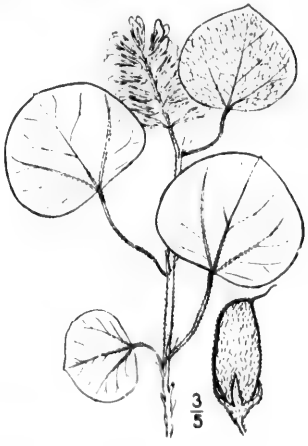
In dry soil, Delaware to Florida, west to Louisiana. May-Sept.

4. Rhynchosia simplicifòlia (Walt.) Wood. Round-leaved Rhynchosia. (Fig. 2233.)

Trifolium simplicifolium Walt. Fl. Car. 184. 1788.
Rhynchosia reniformis DC. Prodr. 2: 384. 1825.
Rhynchosia tomentosa var. *monophylla* T. & G. Fl. N. A. 1: 284. 1838.
Rhynchosia simplicifolia Wood, Bot. & Fl. 96. 1870.

Erect, low, simple, pubescent with spreading hairs, 3′–9′ high. Stipules lanceolate, acuminate, 3″–4″ long; petioles shorter than or exceeding the leaves; leaflet usually solitary, orbicular or broader, thick, obtuse and rounded at the apex, slightly cordate at the base, 1′–2′ long (leaflets rarely 3, the lateral ones ovate); racemes rather densely flowered, peduncled; flowers 3″–5″ long; pod as in the preceding species.

In dry soil, Virginia to Florida, west to Louisiana. May-July.



44. PHASÈOLUS L. Sp. Pl. 723. 1753.

Annual or perennial vines, rarely erect herbs, with pinnately 3-foliolate leaves, and axillary racemose flowers. Calyx 5-toothed or 5-lobed, or the 2 upper teeth more or less united. Standard orbicular, recurved, spreading or somewhat contorted; wings mainly obovate, equalling or exceeding the standard; keel spirally coiled, linear or obovoid. Stamens diadelphous (9 and 1); anthers all alike. Style longitudinally bearded; stigma oblique or lateral; ovary sessile or nearly so; ovules ∞. Pod linear, straight or curved, 2-valved, several-seeded, tipped with the persistent style. Seeds mostly with rounded ends. Rachis thickened at the bases of the pedicels. [Ancient name of the Kidney Bean.]

About 170 species, natives of warm and temperate regions. Besides the following, about 12 others occur in the southern and southwestern states.

1. Phaseolus polystàchyus (L.) B.S.P. Wild Bean or Bean Vine. (Fig. 2234.)

Dolichos polystachyus L. Sp. Pl. 726. 1753.
Phaseolus perennis Walt. Fl. Car. 182. 1788.
Phaseolus polystachyus B.S.P. Prel. Cat. N. Y. 15. 1888.

Climbing over bushes, or trailing, from a perennial root, finely pubescent, branched, 4°–15° long. Stipules lanceolate, deciduous; leaflets broadly ovate or nearly orbicular, acute or acuminate at the apex, rounded at the base, 2′–4′ long, the terminal one often slightly cordate, the lower ones unequal-sided; racemes axillary, usually numerous, peduncled, 4′–12′ long, narrow, loosely-flowered; pedicels 2″–4″ long, minutely bracted at the base; corolla purple, about 4″ long; pods stalked, drooping, somewhat curved, flat, 1½′–2½′ long, 4″–5″ wide, 4–6-seeded, glabrous or nearly so; seeds chocolate-brown, 3″–4″ long.

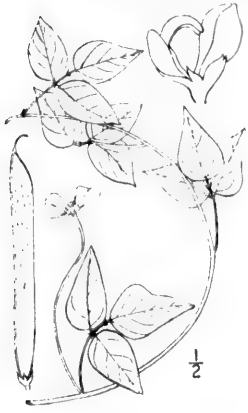
In thickets, Canada (Torrey and Gray), New England, south to Florida, west to Minnesota, Nebraska and Louisiana. July–Sept. Called also Wild Kidney Bean.

45. STROPHOSTÝLES Ell. Bot. S. C. & Ga. 2: 229. 1822.

Twining or trailing herbaceous vines, rarely erect, mostly pubescent, with pinnately 3-foliolate stipellate leaves, and pink-purple or nearly white flowers capitate at the ends of long axillary peduncles. Calyx as in *Phaseolus*. Standard nearly orbicular; wings mostly obovate; keel strongly curved. Stamens diadelphous (9 and 1). Style longitudinally bearded, bent. Pod linear, nearly terete, or somewhat compressed, usually straight, few–several-seeded, tipped by the persistent style. Seeds truncate at the ends, more or less pubescent or mealy. [Greek, bent style.]

An American genus, of about 6 species.

Leaflets mainly lobed, 1′–2′ long; pod 2′–3′ long. 1. *S. helvola.*
Leaflets mainly entire, ½′–1½′ long; pod 1′–2′ long.
  Flowers several, about 6″ long; root perennial. 2. *S. umbellata.*
  Flowers few, about 3″ long; root annual. 3. *S. pauciflora.*



1. Strophostyles hélvola (L.) Britton. Trailing Wild Bean. (Fig. 2235.)

Phaseolus helvolus L. Sp. Pl. 724. 1753.
Phaseolus angulosus Ort. Nov. Pl. 24. 1797.
Phaseolus diversifolius Pers. Syn. 2: 296. 1807.
Strophostyles angulosa Ell. Bot. S. C. 2: 229. 1822.

Prostrate or low-twining, rather rough-pubescent, branched at the base, 2°–8° long, rarely erect and 10′–20′ high. Root annual (always ?); stipules narrowly lanceolate, 1″–2″ long; leaflets broadly ovate, obtuse or acute at the apex, rounded at the base, thickish, generally more or less obtusely lobed, sometimes entire, 1′–2′ long, the lower ones often inequilateral; peduncles axillary, exceeding the petioles; flowers 3–10, sessile, capitate; corolla greenish-purple, 4″–6″ long; keel slender, curved; pod sessile, linear, nearly terete, slightly pubescent, 2′–3′ long; seeds oblong, pubescent, 3″ long.

In sandy soil, eastern Massachusetts to Florida, west to Texas. Also along the Great Lakes from Quebec to Minnesota and south in the Mississippi Valley. July–Oct.

Strophostyles hélvola Missouriénsis (S. Wats.) Britton.

Strophostyles angulosa var. *Missouriensis* S. Wats. in A. Gray, Man. Ed. 6, 145. 1890.

Climbing in trees to a height of 20°–30°. Leaflets larger, usually entire; seeds larger. Said to bloom later. Perhaps a distinct species. Missouri.

2. **Strophostyles umbellàta** (Muhl.) Britton. Pink Wild Bean. (Fig. 2236.)

Glycine umbellata Muhl.; Willd. Sp. Pl. 3: 1058. 1803.

Strophostyles pedunculàris Ell. Bot. S. C. 2: 230. 1822.

Phaseolus helvolus T. & G. Fl. N. A. 1: 280. 1838. Not L. 1753.

Phaseolus umbellatus Britton, Trans. N. Y. Acad. 9: 10. 1889.

Root perennial; stems slender, trailing, branching, more or less pubescent with retrorse hairs, 1°–5° long. Stipules ovate-lanceolate, 1″–2″ long; leaflets ovate, lanceolate or oblong, obtuse or acutish at the apex, rounded at the base, sparingly pubescent, entire, or rarely with 1 or 2 shallow lobes; peduncles generally much longer than the leaves; flowers several, pink, fading yellowish, capitate-umbellate, about 6″ long, similar to those of the preceding species; pedicels ½″–1″ long; pod linear, straight, little compressed, sessile, 1′–2′ long, 2″ wide, sparingly pubescent; seeds mealy-pubescent, 1½″–2″ long.

In sandy soil, Long Island to Florida, Indiana and Louisiana. July–Sept.

3. **Strophostyles pauciflòra** (Benth.) S. Wats. Small Wild Bean. (Fig. 2237.)

Phaseolus pauciflorus Benth. Comm. Leg. Gen. 76. 1837.

Phaseolus leiospermus T. & G. Fl. N. A. 1: 280. 1838.

Strophostyles pauciflorus S. Wats. in A. Gray, Man. Ed. 6, 145. 1890.

Root annual, stem slender, finely retrorsely hirsute, low-climbing or trailing, 1°–2½° long. Stipules ovate-lanceolate, ½″–1½″ long; leaflets lanceolate or linear-oblong, obtuse at the apex, rounded at the base, entire, 9″–18″ long, 3″–5″ wide; peduncles exceeding the leaves; flowers 2–6, capitate-umbellate, purplish, about 3″ long; pod flat, linear, about 1′ long and 2″ wide, very pubescent; seeds purple, glabrous and shining at maturity, 1½″ long.

Along rivers, Indiana to Minnesota, south to Mississippi, Missouri and Texas. July–Sept.

46. **VÍGNA** Savi, Mem. Phas. 3: 7. 1826.

Climbing or trailing herbaceous vines, or sometimes erect herbs, with pinnately 3-foliolate stipulate leaves, the leaflets broad. Flowers clustered at the ends of long axillary peduncles, yellowish or purplish, the rachis of the head or raceme knotty, the bracts and bractlets early deciduous. Calyx 5-toothed, or the 2 upper teeth united. Standard nearly orbicular, auricled at the base; wings shorter than the standard; keel about equalling the standard, slightly incurved. Stamens diadelphous (9 and 1). Ovary sessile; ovules numerous; style bearded along the inner side. Pod linear, nearly terete, 2-valved. [In honor of Domenic Vigni, a commentator on Theophrastus.]

About 30 species, natives of warm and tropical regions. Besides the following, another occurs in the southern United States.

1. Vigna Sinénsis (L.) Endl. Cow Pea. China Bean. Black-eyed Bean. (Fig. 2238.)

Dolichos Sinensis L. Cent. Pl. 2: 28. 1756.
Dolichos Catjang L. Mant. 1: 269. 1767.
Vigna Catjang Walp. Linnaea, 13: 533. 1839.
Vigna Sinensis Endl.; Hassk. Pl. Jav. Rar. 386. 1848.

Annual, glabrous, or somewhat pubescent; stem twining or trailing, striate. Stipules ovate or ovate-lanceolate, acuminate, prolonged backward, 3″–10″ long; petioles stout, often as long as the leaflets or longer; terminal leaflet rhombic ovate, acute or blunt, 2′–6′ long, often about as wide, long-stalked; lateral leaflets very obliquely ovate and inequilateral, about as large as the terminal one, short-stalked; flowers few near the knotty ends of the long peduncles, yellowish, 8″–10″ long; pod fleshy, 4′–7′ long, 3″–4″ thick, nearly straight; seeds with a dark circle around the scar of attachment.

Escaped from cultivation, Missouri to Texas and Georgia. Native of Asia, and called Chowley, Towcok. Seeds edible. July–Sept.

Family 50. **GERANIÀCEAE** J. St. Hil. Expos. Fam. 2: 51. 1805.

GERANIUM FAMILY.

Herbs with alternate or opposite leaves, and axillary solitary or clustered perfect regular flowers. Stipules commonly present. Sepals 5 (rarely fewer), mostly persistent. Petals of the same number, hypogynous. Stamens as many as the sepals, or 2–3 times as many, distinct; anthers 2-celled, versatile. Ovary 1, usually 5-lobed and 5-celled; ovules 1 or 2 in each cavity. Fruit capsular. Embryo straight or curved; cotyledons flat or plicate.

About 10 genera and 450 species, natives of temperate regions, most abundant in South Africa.

Anthers 10, rarely 5; carpel-tails not hairy inside. 1. *Geranium.*
Anthers 5; carpel-tails bearded inside. 2. *Erodium.*

1. GERÀNIUM L. Sp. Pl. 676. 1753.

Herbs with stipulate palmately lobed, cleft or divided leaves, and axillary 1–2-flowered peduncles. Flowers regular, 5-merous. Sepals 5, imbricated. Petals 5, hypogynous, imbricated. Stamens 10 (rarely 5), generally 5 longer and 5 shorter. Ovary 5-lobed, 5-celled, beaked with the compound style. Ovules 2 in each cavity. Capsule elastically dehiscent, the 5 cavities 1-seeded and long-tailed by the persistent style-divisions which are naked on the inner side. [Greek, a crane, from the long beak of the fruit.]

About 170 species, widely distributed in temperate regions. Besides the following, some 6 others occur in western North America.

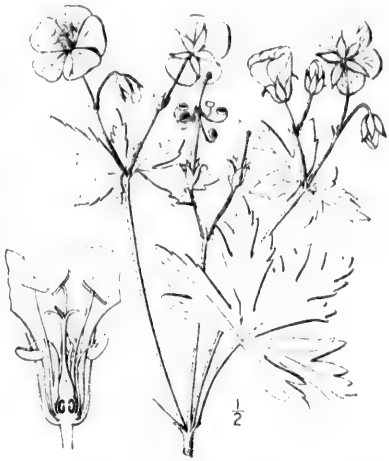
Perennial; flowers 1′ broad or more. 1. *G. maculatum.*
Annuals or biennials; flowers 2″–6″ broad.
  Leaves 3-divided; segments pinnatifid, thin. 2. *G. Robertianum.*
  Leaves pedately lobed or dissected.
    Peduncles 1-flowered. 3. *G. Sibiricum.*
    Peduncles 2-flowered.
      Peduncles longer than the leaves; carpels smooth and glabrous. 4. *G. columbinum.*
      Peduncles short; carpels rugose or hairy.
        Seeds reticulated or pitted.
          Glandular-pubescent with long white hairs. 5. *G. rotundifolium.*
          Pubescent with short hairs; leaves deeply lobed.
            Flowers pale purple; seeds minutely reticulated.
              Beak short-pointed; inflorescence compact. 6. *G. Carolinianum.*
              Beak long-pointed; inflorescence loose. 7. *G. Bicknellii.*
            Flowers deep purple; seeds deeply pitted. 8. *G. dissectum.*
        Seeds smooth or nearly so.
          Stamens 5; carpels hairy, not rugose. 9. *G. pusillum.*
          Stamens 10; carpels glabrate, rugose. 10. *G. molle.*

1. Geranium maculàtum L. Wild or Spotted Crane's-bill. Alum-root. (Fig. 2239.)

Geranium maculatum L. Sp. Pl. 681. 1753.

Perennial from a thick rootstock, pubescent with spreading or retrorse hairs, erect, simple, or branching above, 1°–2° high. Basal leaves long-petioled, nearly orbicular, broadly cordate or reniform, 3′–6′ wide, deeply 3–5-parted, the divisions obovate, cuneate, variously toothed and cleft; stem-leaves 2, opposite, shorter-petioled, otherwise similar to the basal ones; peduncles 1–5, elongated, generally bearing a pair of leaves at the base of the umbellate inflorescence; ultimate pedicels 1′–2′ long; flowers rose-purple, 1′–1½′ broad; sepals awn-pointed, villous, ciliate; petals woolly at the base; beak of the fruit 1′–1½′ long; carpels pubescent; seed reticulate.

In woods, Newfoundland to Manitoba, south to Georgia, Alabama and Missouri. April-July.



2. Geranium Robertiànum L. Herb Robert. Red Robin. (Fig. 2240.)

Geranium Robertianum L. Sp. Pl. 681. 1753.

Annual or biennial, glandular-villous, weak, extensively branching, erect or decumbent, 6′–18′ high, heavy-scented. Leaves thin, ovate-orbicular in outline, ternately divided to the base, the divisions again divided or cleft, finely lobed or toothed, the teeth oblong, mucronate; peduncles slender, 2-flowered, 1′–3′ long; pedicels divaricate, ½′ long; sepals acuminate and awn-pointed; flowers red-purple, about 6″ broad; petals 4″–5″ long, narrow-clawed; beak of the fruit about 1′ long, awn-pointed, nearly glabrous; carpels nearly glabrous, slightly wrinkled; seed smooth.

In rocky woods, rarely in sandy places, New Brunswick and Nova Scotia to Manitoba, south to southern New York, New Jersey, Pennsylvania and Missouri. Occurs also in Europe, Asia and northern Africa. Odor disagreeable. Old names, Red-shanks, Dragons'-blood. May-Oct.

3. Geranium Sibíricum L. Siberian Crane's-bill. (Fig. 2241.)

Geranium Sibiricum L. Sp. Pl. 683. 1753.

Annual, villous-pubescent, freely branched, decumbent or ascending, 1°–4½° high. Leaves deeply 3–5-parted, 2′–2½′ broad, nearly orbicular, or cordate-reniform, the divisions oval-lanceolate, cleft or toothed; peduncles slender, 1-flowered, 2′–3′ long, 2-bracted near the middle; flowers nearly white, 3″–4″ broad; sepals oval, awned; beak of the fruit canescent, 7″–9″ long, tipped with a short prolongation; lobes of the capsule puberulent or hairy, seed minutely reticulate.

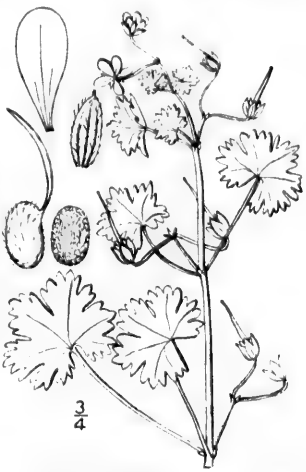
Abundant along roadsides in the northern part of New York City; also found at Cambidge, Mass. Adventive from Asia. Some of the pedicels are rarely 2-flowered. June–Sept.

4. Geranium columbinum L. Long-stalked Crane's-bill. (Fig. 2242.)

Geranium columbinum L. Sp. Pl. 682. 1753.

Annual, slender, decumbent or prostrate, slightly hispid-pubescent with whitish appressed hairs. Leaves 1′–1½′ in diameter, pedately deeply 5–9-divided into narrow, mostly linear variously cleft segments; petioles very slender, those of the lower and basal leaves often 5′–6′ long; peduncles also slender, longer than the upper leaves, 2-flowered; pedicels 1′–3′ long; flowers purple, about 4″ broad; sepals ovate, awn-pointed, enlarging in fruit; petals notched; capsule-lobes nearly glabrous, keeled, not rugose; beak 6″–10″ long, hispid; seeds deeply pitted.

In fields and along roadsides, New Jersey, Pennsylvania, Maryland and Virginia. Also in Dakota. Naturalized or adventive from Europe. Native also of northern Asia. May–July.

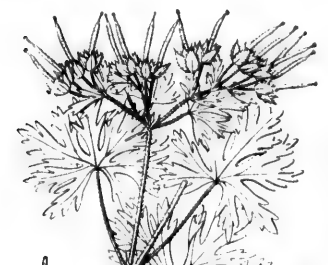


5. Geranium rotundifòlium L. Round-leaved Crane's-bill. (Fig. 2243.)

Geranium rotundifolium L. Sp. Pl. 683. 1753.

Annual, often tufted, 6′–18′ high, much branched, softly pubescent with spreading white purple-tipped glandular hairs. Leaves reniform-orbicular, broader than long, 1½′ wide, cleft about to the middle into 5–9 obtuse broad lobes, which are 3–5-toothed; petioles slender, those of the basal leaves elongated; flowers purple, 2″–3″ broad; sepals ovate, or oval, short-pointed, somewhat shorter than the entire obovate petals; ovary and capsule-lobes hairy, not wrinkled; beak pubescent, about 6″ long, pointed with a short awn; seeds reticulated.

In waste places, Michigan, and in ballast about New York. Fugitive from Europe. Native also of northern Asia. Summer.



6. Geranium Caroliniànum L. Carolina Crane's-bill. (Fig. 2244.)

Geranium Carolinianum L. Sp. Pl. 682. 1753.

Annual, erect, generally branched from the base and also above, stout, 6′–15′ high, loosely pubescent with spreading often glandular gray hairs. Leaves petioled, reniform-orbicular in outline, 1′–3′ wide, deeply cleft into 5–9 oblong or obovate cuneate toothed or lobed segments; peduncles rather short and stout, 2-flowered; flowers in compact clusters, pale pink or whitish, 4″–6″ broad; sepals ovate, ciliate, awn-pointed, about equalling the obovate emarginate petals; ovary-lobes hispid-pubescent; persistent filaments not longer than the carpels; beak nearly 1′ long, short-pointed; seeds ovoid-oblong, finely reticulated.

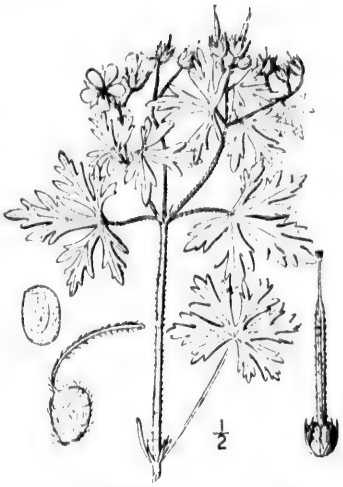
In barren soil, Nova Scotia (?), New England to British Columbia, south to Florida and Mexico. Also in Bermuda. April–Aug.

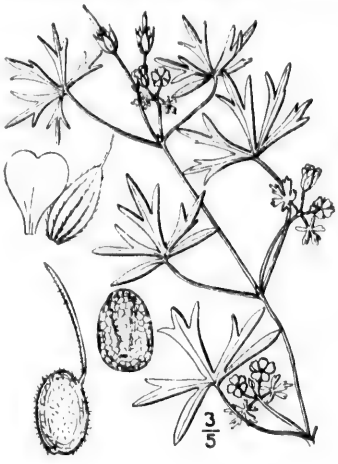
7. Geranium Bicknéllii Britton. Bicknell's Crane's-bill. (Fig. 2245.)

Geranium Bicknellii Britton, Bull. Torr. Club, 24: 92. 1897.

Similar to the preceding species, but taller, the stems usually more slender, loosely pubescent. Leaves slender-petioled, somewhat angulate in outline, the segments oblong or linear-oblong, mostly narrower; peduncles slender, 2-flowered, the inflorescence loose; sepals lanceolate, awn-pointed; ovary-lobes pubescent; persistent filaments longer than the carpels; beak about 1′ long, long-pointed, its tip 2″–3″ long; seeds reticulated.

Nova Scotia (?), Maine to Western Ontario and southern New York. May–Sept.





8. Geranium dissĕctum L. Cut-leaved Crane's-bill. (Fig. 2246.)

Geranium dissectum L. Amoen. Acad. 4: 282. 1760.

Closely related to the two preceding species, but smaller in every way, more slender, the branches decumbent or ascending; leaves seldom more than 1½′ wide, deeply cleft into narrower segments; inflorescence loose; peduncles short, 2-flowered; flowers purple, about 3″ broad; sepals ovate, awned, equalling or slightly longer than the notched petals; capsule-lobes and beak pubescent; seeds ovoid or globose, deeply pitted.

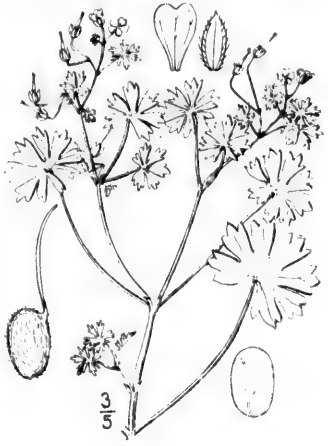
In waste places, and in ballast in New York and New Jersey. Also in the far Northwest. Fugitive from Europe. June–Sept.

9. Geranium pusillum L. Small-flowered Crane's-bill. (Fig. 2247.)

Geranium pusillum L. Sp. Pl. Ed. 2, 957. 1763.

Annual, widely branching, slender, weak, pubescent or villous, 4′–18′ long. Leaves petioled, reniform-orbicular, ½′–1½′ wide, deeply divided into 7–9 oblong, or sometimes linear-oblong, entire or 3-toothed, cuneate lobes; peduncles short, 3″–9″ long, 2-flowered; pedicels 3″–12″ long; sepals acute, awnless; flowers pale-purple, 3″–5″ broad; petals notched; capsule-lobes hairy, keeled, not wrinkled; beak about 5″ long, canescent; seed smooth; anther-bearing stamens commonly only 5, as in *Erodium*.

In waste places, southern New England to western New York, New Jersey, Pennsylvania, Ohio, Ontario and British Columbia. Adventive from Europe. May–Sept.



10. Geranium mólle L. Doves's-foot Crane'-bill. (Fig. 2248.)

Geranium molle L. Sp. Pl. 682. 1753.

Resembling the preceding species, but more villous, the leaves nearly orbicular in outline and not as deeply cleft, generally only to just below the middle, into 7–11 obovate or cuneate lobes, which are 3–5-toothed at the apex; flowers dark-purple, 3″–5″ broad; sepals obtusish, not awned; capsule-lobes distinctly marked with transverse wrinkles; beak about 5″ long, sparingly pubescent; seeds smooth or striate, not pitted, nor reticulate; anther-bearing filaments 10.

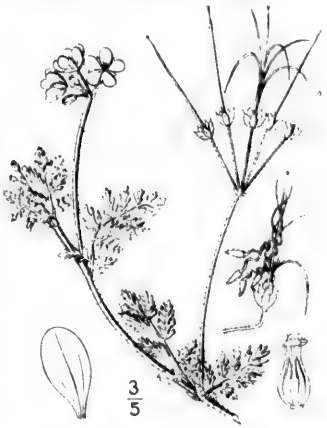
In waste places, Maine to Pennsylvania, New York, Ohio and Ontario. Also in Washington and Vancouver. Fugitive from Europe. Other English names are Pigeon-foot, Starlights, Culverfoot. May–Sept.

2. ERÒDIUM L'Her. Geran. *pl. 1.* 1787.

Herbs, generally with jointed nodes, opposite or alternate stipulate leaves, and axillary umbellate nearly regular flowers. Sepals 5, imbricated. Petals 5, hypogynous, imbricated, the 2 upper slightly smaller. Glands 5. Anther-bearing stamens 5, alternating with as many sterile filaments. Ovary 5-lobed, 5-celled, beaked by the united styles, the beak terminating in 5 stigmas; ovules 2 in each cavity. Capsule-lobes 1-seeded, the styles elastically dehiscent and coiled spirally at maturity, villous-bearded on the inner side. Seeds not reticulate. [Greek, a heron, from the resemblance of the fruit to its beak and bill.]

About 60 species, widely distributed in temperate and warm regions. There are three native species in the southwest and several exotic ones have been collected on ballast at the seaports.

1. Erodium cicutàrium (L.) L'Her. Hemlock Stork's-bill or Heron's-bill. Alfilaria. Pine Needle. (Fig. 2249.)



Geranium cicutarium L. Sp. Pl. 680. 1753.
Erodium cicutarium L'Her.; Ait. Hort. Kew. 2: 414. 1789.

Annual, tufted, villous-pubescent, somewhat viscid, erect or ascending, branched, 6′–12′ high. Basal and lower leaves petioled, 3′–7′ long, ½′–1′ wide, pinnate, the divisions finely pinnatifid; upper leaves sessile, otherwise similar; peduncles generally longer than the leaves, umbellately 2–12-flowered; flowers purple or pink, 4″–5″ broad; sepals acute, villous, about equalling the entire petals; carpels hairy; beak ½′–1½′ long, its divisions spirally coiled when ripe.

Waste places and fields, Nova Scotia, Ontario, New Jersey, New England, Pennsylvania and Michigan and very abundant from Texas to Oregon. Adventive from Europe, in our area. A common weed in the Old World. Called also Pin-clover, Pin-grass. April–Sept.

Erodium moschatum Willd., reported from Ontario and Maine, has much broader leaf-segments.

Family 51. **OXALIDÀCEAE** Lindl. Nat. Syst. Ed. 2, 140. 1836.

Wood-sorrel Family.

Annual or perennial leafy-stemmed or acaulescent herbs, or rarely shrubs, often with rootstocks or scaly bulbs, the sap sour. Leaves mostly palmately 3-foliolate, in some exotic species pinnate or entire and peltate; stipules commonly present as scarious expansions of the petiole-bases; leaflets mostly obcordate. Flowers perfect, in umbel-like or forking cymes, or sometimes solitary; peduncles mostly long. Sepals 5, often unequal. Petals 5, white, pink, purple or yellow. Stamens 10–15. Ovary 5-celled, 5-lobed; styles united, or distinct; ovules 2–many in each cavity; fruit a loculicidal globose or columnar capsule, rarely baccate. Embryo straight, in fleshy endosperm.

About 7 genera and 270 species, chiefly of tropical distribution.

* Text contributed by Dr. John K. Small.

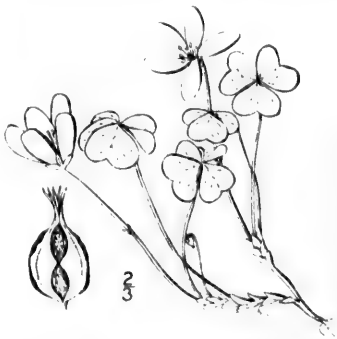
1. ÓXALIS L. Sp. Pl. 433. 1753.

Annual or perennial, caulescent or acaulescent, often bulbous herbs, with alternate, basal or cauline, mostly digitately-compound leaves (3-foliolate in our species) and axillary or basal, 1-several-flowered peduncles. Flowers regular, often heterogonous. Sepals 5, imbricated. Petals 5, hypogynous. Stamens 10, monadelphous at base, 5 longer and 5 shorter, all anther-bearing. Ovary 5-lobed, 5-celled; ovules several in each cavity; styles 5, separate, persistent, stigmas terminal. Capsule subglobose, ovoid, or columnar, loculicidally dehiscent. Seeds 2 or more in each cavity, anatropous, with a loose aril-like dehiscent outer coat. Cotyledons flat; endosperm fleshy. [Greek, sour, from the acid juice.]

About 250 species, mostly natives of warm or tropical regions, a few in the temperate zones. Besides the following, some 10 others occur in the southern and western states.

Acaulescent; flowers white, pink or rose-purple.
- Scape 1-flowered; flower pink, or rarely white; capsule subglobose. 1. *O. Acetosella.*
- Scape several-flowered; flowers rose-purple, or rarely white; capsule ovoid. 2. *O. violacea.*

Caulescent; flowers yellow.
- Flowers in umbel-like cymes.
  - Stems creeping; stipules usually conspicuous. 3. *O. corniculata.*
  - Stems not creeping, erect or decumbent; stipules usually inconspicuous.
    - Pedicels with appressed pubescence, reflexed or deflexed in mature fruit.
      - Stems wiry; capsules 4″–6″ long, gradually narrowed to the apex. 4. *O. filipes.*
      - Stems stout; capsules 8″–15″ long, abruptly narrowed at the apex. 5. *O. stricta.*
    - Pedicels villous, erect or spreading in fruit. 6. *O. recurva.*
- Flowers in dichotomous cymes.
  - Petals 4″–5″ long; capsules slender, 5″–7″ long; seeds ⅓″ long. 7. *O. cymosa.*
  - Petals 6″–8″ long; capsules stout, 3″–5″ long; seeds 1″ long. 8. *O. grandis.*



1. Oxalis Acetosélla L. White or True Wood-sorrel. Alleluia. (Fig. 2250.)

Oxalis Acetosella L. Sp. Pl. 433. 1753.

Perennial from a scaly nearly unbranched root-stock, acaulescent, 2″–6″ high, pubescent with scattered brownish hairs. Leaves 3–6, long-petioled; petioles jointed and dilated at the base; leaflets obcordate, wider than long; scapes 1–3, slightly longer than the leaves, 1-flowered, 2-bracted above the middle; flowers broadly campanulate, about ½′ long; sepals obtusish; petals white or pink, veined with deep pink, emarginate or entire, 3–4 times as long as the calyx; capsule subglobose, 1″–2″ long, glabrous, its cavities 1–2-seeded; seeds ovoid, longitudinally grooved.

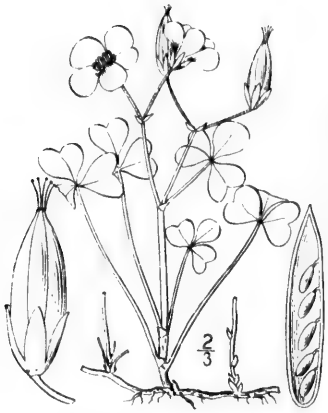
In cold damp woods, Nova Scotia to Manitoba, the mountains of North Carolina, and the north shore of Lake Superior. Cleistogene flowers are borne on recurved scapes at the base of the plant. Native also in Europe, Asia and northern Africa. Old names, Wood-sower or Wood-sour, Cuckoo's Meat, Sour Trefoil, Stub-wort, Shamrock. Yields the druggists' "Salt of Lemons." May-July.

2. Oxalis violàcea L. Violet Wood-sorrel. (Fig. 2251.)

Oxalis violacea L. Sp. Pl. 434. 1753.

Perennial from a brownish bulb with ciliate scales, acaulescent, 4′–9′ high, nearly or quite glabrous. Leaves generally 4–8, long and slender-petioled, about 1′ wide; leaflets obcordate, minutely reticulated, the midrib sometimes sparingly hairy; scapes several, commonly exceeding the leaves, umbellately 3–12-flowered; pedicels slender; flowers 8″–10″ long, heterogonous; sepals obtuse; petals rose-purple, rarely white, lighter toward the base, obtuse or truncate, 3 times as long as the sepals; capsule ovoid, 2″ in diameter; cavities 2–3-seeded; seeds flattened, rugose-tuberculate.

In woods, northern New England to Minnesota and the Rocky Mountains, south to Florida and New Mexico. Also apparently the same plant in the Andes of Bolivia. May June.



3. Oxalis corniculàta L. Yellow Procumbent Wood-sorrel. (Fig. 2252.)

Oxalis corniculata L. Sp. Pl. 435. 1753.

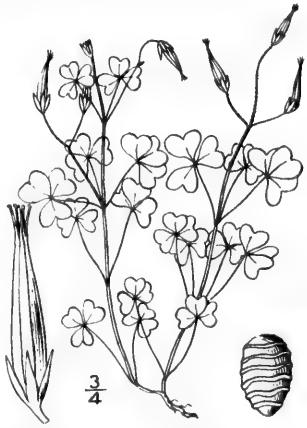
Annual or perennial from creeping rootstocks, pubescent with appressed hairs or nearly glabrous, freely branching from the base and with a few branches above; stem 1′–6′ high, the branches diffuse, mainly procumbent and often rooting from the nodes. Leaflets obcordate, wider than long, about ½′ wide; petioles slender, dilated at the base into oblong rounded or truncate stipules; peduncles 1–3-flowered; flowers yellow, 2″–6″ long; pedicels strigillose, more or less reflexed; capsule oblong, gradually narrowed to the apex, 5″–9″ long; appressed pubescent; seeds compressed, transversely ridged.

In ballast about the eastern sea-ports, and frequently growing on the ground in greenhouses. Texas and throughout tropical America. Recently found in Ontario. Occurs also in warm and tropical regions of the Old World. Ladies' Sorrel. Feb.–Nov.

4. Oxalis filipes Small, n. sp. Slender Yellow Wood-sorrel. (Fig. 2253.)

Annual or perennial, very slender, sparsely pubescent with appressed hairs; stem erect, nearly simple, usually very leafy, wiry, 10′–2° high. Leaves ¼′–½′ wide, long-petioled, not stipulate, or the stipules represented by a narrow dilation of the base of the petiole; leaflets obcordate, with unequal sides, peduncles slender, equalling or exceeding the leaves, 2–3-flowered; flowers yellow, in umbel-like cymes; pedicels very slender, strigillose or glabrate, recurved in mature fruit; sepals oblong-lanceolate, 2″ long, obtuse with a tuft of hair at the apex; petals 4″ long, emarginate; capsule 4″–6″ long, gradually narrowed to the apex, often curved; seeds obovoid or oblong, ½″ long, with continuous ridges.

In woods, Virginia to Tennessee, south to Georgia and Tennessee. Plant smaller than the preceding, with the leaflets often dark-margined. May–Aug.



5. Oxalis stricta L. Upright Yellow Wood-sorrel. (Fig. 2254.)

Oxalis stricta L. Sp. Pl. 435. 1753.
Oxalis corniculata var. *stricta* Sav. in Lam. Encycl. 4: 683. 1797.

Annual, or perennial, usually low and erect, pale green. Stem commonly branched at the base, the branches spreading, 5′–6′ long, more or less strigose; leaves 9″–1½′ broad; leaflets coarsely cellular, very sensitive, closing when touched; petiole-bases narrowly dilated; flowers yellow, fragrant, in umbel-like cymes, peduncles 1¼′–6′ long, stout; pedicels at length deflexed; sepals linear or lanceolate, about 2½″ long, ciliolate, erect or ascending; petals 4″–5″ long, commonly reddish at the base; capsule columnar, 8″–15″ long, abruptly narrowed at the summit; seeds obovoid, or elliptic, about ½″ long, with interrupted transverse ridges.

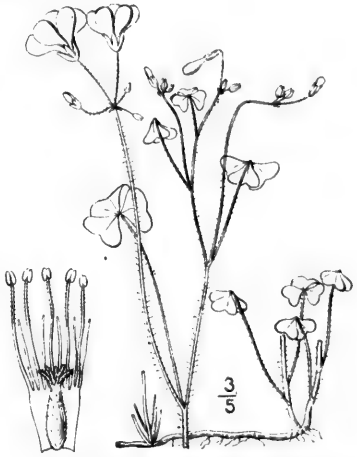
In woods and fields, Nova Scotia to Dakota and Colorado, south to Florida and Texas. Introduced into Europe as a weed. April–Oct.

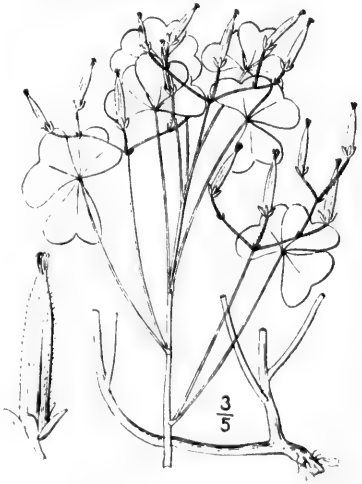
6. Oxalis recúrva Ell. Large-flowered Wood-sorrel. (Fig. 2255.)

Oxalis recurva Ell. Bot. S. C. & Ga. 1: 526. 1821.

Perennial by horizontal rootstocks, pilose or villous. Stem erect, or decumbent, 5′–12′ tall, often woody at the base; leaves ½′–1¼′ broad; leaflets sharply notched; petioles 1½′–3½′ long, pubescent like the stem, slightly dilated at the base; flowers bright yellow, in umbel-like cymes, 1 or 2 opening at a time; pedicels villous, about as long as the flowers, erect, or spreading; sepals oblong, about 3″ long, obtuse, nearly erect; petals about 7″ long, slightly notched; capsule columnar, 6″ long, abruptly narrowed at the summit; seeds obovoid, ¾″ long, with broken transverse ridges.

In rocky or sandy places, Missouri to South Carolina and Alabama. April–Aug.





7. Oxalis cymòsa Small. Tall Yellow Wood-sorrel. (Fig. 2256.)

Oxalis cymosa Small, Bull. Torr. Club, 23: 267. 1896.

Annual or perennial, normally tall, bright green. Stem usually erect, 6′–4° high, branched above, often villous, reddish or brown; leaves 9″–18″ broad, on petioles 1½′–3′ long; leaflets broader than long, sharply notched; petiole-bases scarcely dilated; flowers yellow, in dichotomous cymes; pedicels erect, or ascending, 3″–4″ long, more or less villous; sepals lanceolate or narrowly elliptic, 2″–3″ long, finally spreading; petals obtuse, or emarginate, 4″–5″ long; capsule slender, columnar, 5″–7″ long, gradually narrowed to the summit; seeds obovoid-oblong, ¾″ long, with nearly continuous ridges.

In woods and fields, Ontario to Michigan, Florida, Nebraska and Texas. May–Oct.

8. Oxalis grándis Small. Great Yellow Wood-sorrel. (Fig. 2257.)

Oxalis recurva Trel. Mem. Bost. Soc. Nat. Hist. 4: 80. 1888. Not Ell. 1821.

Oxalis grandis Small, Bull. Torr. Club, 21: 474. 1894.

Annual or biennial, stout, glabrate below or villous, bright green. Stem erect, 1°–4° tall, simple, or nearly so; leaves 1½′–3′ broad; leaflets usually unequal, often with a brown margin, more or less ciliate; petioles villous, hardly dilated at the base, 2′–6′ long; flowers yellow, in dichotomous cymes; pedicles 5″–7″ long, erect, or spreading; sepals unequal; ovate, or oblong, 2″–3″ long, often ciliate at the apex; petals rounded at the apex, 6″–8″ long; capsule stout, ovoid, or ovoid-oblong, 3″–5″ long, seeds ovoid or obovoid, 1″ long, with conspicuous broken transverse ridges.

On river banks, Pennsylvania to Illinois, North Carolina and Tennessee. May–Aug.

Family 52. **LINÀCEAE** Dumort. Comm. Bot. 61. 1822.

Flax Family.

Herbs, or shrubs, with alternate or opposite leaves, and perfect regular nearly symmetrical flowers. Stipules mostly small or none. Sepals 5, rarely 4, imbricated, persistent. Petals of the same number and alternate with the sepals, imbricated, generally contorte[1]. Stamens of the same number, alternate with the petals; filaments monadelphous at the base; anthers versatile, 2-celled. Ovary 1, 2–5-celled, or by false septa 4–10-celled. Ovules anatropous. Styles 2–5. Fruit mainly capsular. Seeds 1–2 in each cavity, oily; endosperm little or none; embryo straight; cotyledons flat.

Four known genera and about 150 species of wide geographic distribution in temperate and tropical regions.

1. **LÌNUM** L. Sp. Pl. 277. 1753.

Annual or perennial herbs, sometimes woody at the base, with alternate or opposite, rarely verticillate, sessile leaves, and perfect flowers. Inflorescence axillary or terminal, cymose, racemose or paniculate. Stipules a pair of glands, or wanting. Sepals 5. Petals 5, fugacious. Stamens 5, monadelphous, sometimes with interspersed staminodia. Ovary 4–5-celled, or 8–10-celled by false partitions, the real cavities 2-ovuled. Capsule 5–10-valved. [The classical Latin name.]

About 90 species, natives of temperate or warm regions. In addition to the following some 17 others occur in the southern and western parts of the United States.

* **Flowers blue.**

Annual; introduced; capsule about as long as the calyx. 1. *L. usitatissimum.*
Perennial; western; capsule much exceeding the calyx. 2. *L. Lewisii.*

* * **Flowers yellow.**

Capsules 1″–1½″ long.
Leaves and bracts entire.
Stem nearly terete, corymbosely branched; usually only the lowest leaves opposite.
Leaves thin, oblong or oblanceolate, spreading. 3. *L. Virginianum.*
Leaves firm, appressed-ascending.
Capsule depressed-globose, 1″ high. 4. *L. medium.*
Capsule ovoid, 1½″ high. 5. *L. Floridanum*
Stem angled, racemosely branched; leaves below the branches mostly all opposite. 6. *L. striatum.*
Upper leaves and bracts glandular-ciliate. 7. *L. sulcatum.*
Capsules 2″–2½″ long. 8. *L. rigidum.*

* * * **Flowers white, small, long-pedicelled.** 9. *L. catharticum.*

1. Linum usitatissimum L. Flax. Lint-bells. Linseed. (Fig. 2258.)

Linum usitatissimum L. Sp. Pl. 277. 1753.

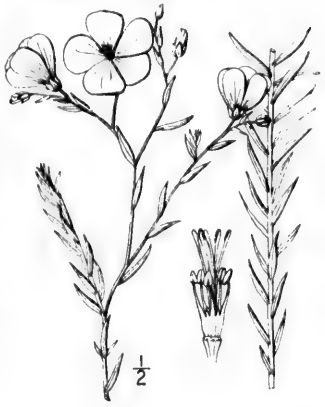
Annual, often tufted, erect, branching above, 12′–20′ high, glabrous and somewhat glaucous. Stem terete, striate, the branches slightly angular; leaves alternate, 3-nerved, lanceolate, ½′–1½′ long, 1″–3″ wide, acute or acuminate; stipules none; inflorescence a terminal cymose leafy panicle; flowers blue, 6″–8″ broad; pedicels slender; sepals oval, acuminate, the interior ones ciliate and 3-ribbed; petals obcuneate, crenulate, twice the length of the sepals; capsule ovoid-conic, 3″–4″ long, equalling or somewhat exceeding the sepals, indehiscent, incompletely 10-celled, the septa not ciliate; seeds compressed.

Along roadsides, railways and in waste places, fugitive from Europe or from cultivation. Called also Flix, Lin, Lint. Summer.

Linum humile Mill. Gard. Dict. No. 2, variously regarded by authors as a distinct species or a variety or form of the Common Flax, may be distinguished by its dehiscent capsule with ciliate septa. It is rarely met with in our area in similar situations. Both have been cultivated since prehistoric times for their fibre and oil. Their origin is unknown.

2. Linum Lewisii Pursh. Lewis' Wild Flax. (Fig. 2259.)

Linum Lewisii Pursh, Fl. Am. Sept. 210. 1814.
Linum perenne var. *Lewisii* Eat. & Wright, N. A. Bot. 302. 1840.

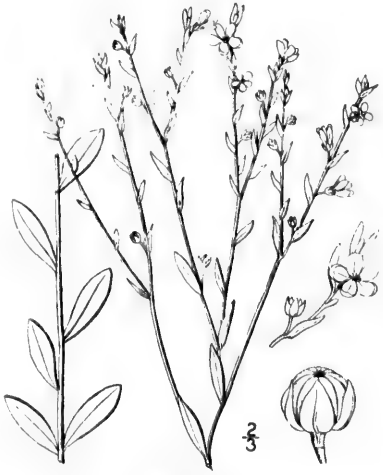


Perennial from a woody root, 1°–2° high, glabrous, glaucous, densely tufted, simple up to the cymose inflorescence. Leaves crowded, oblong or linear, 3″–20″ long, ½″–2″ wide, acute or acutish, 3–5-nerved; flowers blue, 1′–1½′ broad; sepals oval, mainly obtuse, one-third or one-fourth the length of the petals; stigmas shorter than the styles; capsule broadly ovoid, 2–3-times as long as the calyx, obtuse, incompletely 10-celled, dehiscent, the septa ciliate.

Prairies, Manitoba to Texas, west to Arizona, Utah and Alaska. Summer.

The European *L. perenne* L., otherwise nearly identical with this species, differs in having heterogonous flowers.

3. Linum Virginiànum L. Wild or Slender Yellow Flax. (Fig. 2260.)



Linum Virginianum L. Sp. Pl. 279. 1753.

Perennial by suckers, erect or ascending, glabrous, rather dark green, simple below, corymbose-paniculate above, 1°–2° high. Stem and branches terete, slender, not stiff, striate, or slightly angled above; flowering branches ascending, or sometimes weak and recurved; fruiting branches ascending, or somewhat spreading; leaves thin, oblong, or oblanceolate, spreading or ascending, 1-nerved, 6″–13″ long, 2″–3″ wide, acute, or the lower opposite and spatulate, obtuse; pedicels filiform, the lower 2″–6″ long, longer than the calyx; flowers yellow, 3″–4″ broad; sepals ovate, acute, not ciliate, about equalling the depressed-globose 10-celled capsule, which is about 1″ high.

In shaded situations, New England to Georgia. June–Aug.

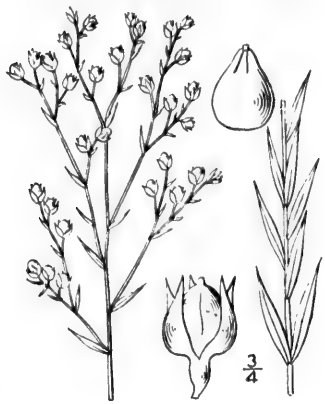
4. Linum mèdium (Planch.) Britton. Stiff Yellow Flax. (Fig. 2261.)

Linum Virginianum var. *medium* Planch. Lond. Bot. 7: 480. 1848.

Perennial by suckers, glabrous; stems erect, striate, stiff, not angled, corymbosely branched above, the branches erect-ascending both in flower and in fruit; leaves firm, appressed-ascending, the lowest commonly spatulate and opposite, the others lanceolate to linear-lanceolate, acute, 4″–12″ long, ½″–2″ wide; pedicels ½″–3″ long, the lower rarely longer than the calyx; sepals ovate, or ovate-lanceolate, acute, about equalling the depressed-globose capsule, which is about 1″ high.

In dry soil, Ontario to Florida and Texas. June–Aug.

5. Linum Floridànum (Planch.) Trel. Florida Yellow Flax. (Fig. 2262.)



Linum Virginianum var. *Floridanum* (?) Planch. Lond. Journ. Bot. 7: 180. 1848.
Linum Floridanum Trel. Trans. St. Louis Acad. 5 13. 1887.

Perennial, glabrous, stem strict, stiff, terete, 1½°–2½° high, corymbosely branched above, the branches erect-ascending, slightly angled. Leaves acute, the lowest mostly opposite, narrowly oblong or oblanceolate, the others linear-lanceolate, appressed-ascending, alternate, 5″–10″ long, ½″–2″ wide; fruiting branches erect-ascending; fruiting pedicels shorter than or little exceeding the calyx, or the lowest ones slightly longer; sepals ovate, acute or acuminate, about equalling the capsule; capsule ovoid, about 1½″ long; petals yellow, twice as long as the calyx.

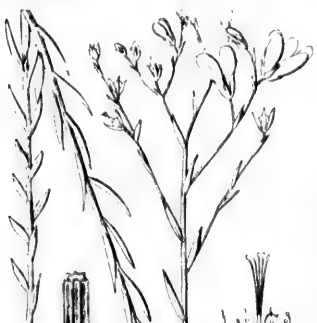
Illinois (according to Trelease), Florida to Louisiana. June–Aug.

6. Linum striàtum Walt. Ridged Yellow Flax. (Fig. 2263.)

Linum striatum Walt. Fl. Car. 118. 1788.
Linum diffusum Wood, Bot. & Flor. 66. 1870.

Perennial, racemosely branched, light green and somewhat viscid, so that the plant adheres to paper in which it is dried, the stem and branches sharply angled or even winged by low ridges decurrent from the leaf-bases. Leaves usually opposite nearly up to the inflorescence, oblong, acute or obtuse; branches of the panicle short and divergent; flowers small, yellow, often clustered; capsule subglobose, usually rather longer than the sepals.

In bogs and swamps, rarely in drier ground, Ontario to Connecticut, Florida, Kentucky, Arkansas and Texas. Summer.



7. Linum sulcàtum Riddell. Grooved Yellow Flax. (Fig. 2264.)

Linum sulcatum Riddell, Suppl. Cat. Ohio Pl. 10. 1836.
Linum Bootii Planch. Lond. Journ. Bot. 7: 475. 1848.
Linum simplex Wood, Bot. & Flor. 66. 1870?

Annual, simple or branched, 1°–2° high. Stem wing-angled and grooved, at least above; leaves alternate, lanceolate or linear, 8″–12″ long, 1″–1½″ wide, acute or acuminate, 3-nerved, the lower glabrous, the upper smaller and glandular-ciliate, as are the floral bracts and sepals; stipules represented by a pair of small globose dark-colored glands; flowers racemose or corymbose, about 6″ broad, yellow; pedicels 1″–4″ long; sepals lanceolate, acute, slightly longer than the ovoid, acute, incompletely 10-celled pod; styles separate above the middle; septa of the capsule ciliate.

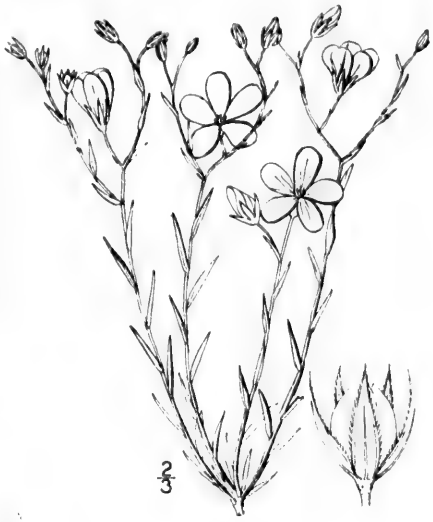
In dry soil, Ontario to Manitoba, south, especially along the mountains, to Georgia, west to Texas, rare near the Atlantic coast. Summer.

8. Linum rígidum Pursh. Large-flowered Yellow Flax. (Fig. 2265.)

Linum rigidum Pursh, Fl. Am. Sept. 210. 1814.

Perennial (?), 6′–15′ high, branched, glaucous, glabrous or puberulent. Branches stiff, more or less angular; leaves erect, linear or linear-lanceolate, 4″–12″ long, ½″–1″ wide, acute or mucronate, the upper ones glandular-serrulate or ciliate; stipular glands minute, globose, sometimes wanting; flowers yellow, 9″–15″ broad; sepals lanceolate, acute or awn-pointed, glandular-serrulate; petals cuneate-obovate, twice the length of the sepals; styles separate only at the summit; capsule ovoid, 5-valved, shorter than the sepals, 2″–2½″ long.

Prairies, Manitoba to Texas, New Mexico, Arizona and Mexico. Summer.



9. Linum catharticum L. Dwarf or Cathartic Flax. (Fig. 2266.)

Linum catharticum L. Sp. Pl. 281. 1753.

Annual, slender, glabrous, usually branched, 3′–8′ high. Leaves all opposite, sessile, oval or somewhat obovate, entire, 2″–4″ long; flowers axillary and terminal, white, 2″–3″ broad, on long slender erect or ascending pedicels; sepals lanceolate, acute or acuminate; petals obovate; pod small, globose.

Along a low sandy seashore, Pictou, Nova Scotia. Apparently naturalized from Europe where it is abundant on chalky soils. Called also Fairy, Mountain or Purging Flax, Fairy Lint. July–Aug.

Family 53. **ZYGOPHYLLÀCEAE** Lindl. Nat. Syst. 1830.

CALTROP FAMILY.

Herbs, shrubs, or some tropical species trees, the branches often jointed to the nodes. Leaves mostly opposite, stipulate, pinnate, or 2–3-foliolate, the leaflets entire. Stipules persistent. Flowers perfect, axillary, peduncled. Sepals usually 5, distinct, or united by their bases. Petals the same number as the sepals, or none. Stamens as many as the petals, or 2–3 times as many, inserted on the base of the receptacle, the alternate ones sometimes longer; anthers versatile, longitudinally dehiscent; filaments usually with a small scale at the base or near the middle. Ovary 4–12-celled; style terminal; stigma usually simple; ovules 1–numerous in each cavity, pendulous, or ascending. Fruit various, dry in our species. Endosperm of the seed copious or none; embryo straight or curved; cotyledons linear or oblong.

About 20 genera and 150 species, widely distributed in warm and tropical regions.

Fruit spiny, splitting into 5 4–5-seeded segments. 1. *Tribulus.*
Fruit not spiny, often tubercled, splitting into 10–12 1-seeded segments. 2. *Kallstroemia.*

1. TRÍBULUS L. Sp. Pl. 387. 1753.

Herbs, mostly prostrate, with evenly pinnate leaves and peduncled axillary yellow flowers. Sepals 5, persistent. Petals 5, deciduous. Stamens 10, the alternate ones somewhat longer. Ovary sessile, 5-lobed, 5-celled, hairy, the hairs erect; style short; stigma 5-ridged; ovules 3–5 in each cavity, pendulous. Fruit 5-angled, spiny, splitting into 5 3–5-seeded segments. [Greek, three-pronged, Caltrop, from the resemblance of the fruit to that implement.]

About 12 species, natives of warm and tropical regions. Besides the following, another occurs in the southwestern States.

1. Tribulus terréstris L. Ground Burnut. Land Caltrop. (Fig. 2267.)

Tribulus terrestris L. Sp. Pl. 387. 1753.

Annual, pubescent, branched from the base, the stem prostrate or ascending, sometimes 1° long or more. Leaves petioled; stipules small; leaflets 4–8 pairs, oblong, inequilateral, opposite, short-stalked, acutish or obtuse, 3″–8″ long; flowers solitary, about 6″ broad, peduncled; peduncles shorter than the leaves; petals oblong, about as long as the sepals; segments of the fruit usually with 2 long spines, 2 shorter ones, and a row of very short ones forming a crest on the back, also commonly with some bristle-like hairs.

In ballast and waste places about the eastern seaports, and in central Nebraska. Fugitive from Europe. June–Sept.

2. KALLSTROÈMIA Scop. Introd. 212. 1777.

Mostly annual branching pubescent herbs, the branches often prostrate, with opposite stipules, evenly pinnate leaves, and solitary axillary peduncled yellow flowers. Sepals usually 5, persistent or deciduous. Petals the same number, obovate or oblanceolate, deciduous. Stamens twice as many as the petals. Ovary sessile, 10–12-celled; ovule 1 in each cavity, pendulous; style long, or short, 10–12-grooved, persistent; stigma mostly 10–12-ridged. Fruit 10–12-lobed, not spiny, often tubercled, splitting into 10–12 1-seeded segments. [In honor of Kallstroem.]

About 10 species, of wide distribution in warm and tropical regions. Besides the following, 3 others occur in the southern and western States.

1. Kallstroemia máxima (L.) T. & G. Greater Caltrop. (Fig. 2268.)

Tribulus maximus L. Sp. Pl. 387. 1753.
Kallstroemia maxima T. & G. Fl. N. A. 1: 213. 1838.

Annual, branches slender, prostrate, 6′–18′ long. Leaves short-petioled; stipules subulate, shorter than the petioles; leaflets 3–5 pairs, oval, or oblong, inequilateral, acute or obtuse at the apex, rounded or subcordate at the base, 4″–10″ long; peduncles slender, 6″–2′ long in fruit; flowers 1′ broad, or less; sepals linear-lanceolate, very pubescent, persistent, shorter than the petals; fruit ovoid-conic, about 3″ in diameter, about as long as the stout persistent style, the segments tubercled.

In dry soil, Kansas to Georgia, Florida and Texas. Also in tropical America. April–Sept.

Family 54. RUTÀCEAE Juss. Gen. 296. 1789.

Rue Family.

Trees or shrubs, rarely herbs, with heavy-scented and glandular-punctate foliage, alternate or opposite mainly compound exstipulate leaves, and (in our species) polygamo-dioecious generally cymose flowers. Sepals 4–5, or none. Petals 4–5, hypogynous or perigynous. Stamens of the same number, or twice as many, distinct, inserted on the receptacle; anthers 2-celled, mostly versatile. Disk annular. Pistils 2–5, distinct, or 1 and compound of 2–5 carpels, inserted

on the somewhat elongated receptacle. Fruit (in our species) a capsule, or samara. Seeds oblong or reniform; embryo straight or curved; endosperm generally fleshy, sometimes none; cotyledons thick or foliaceous.

About 110 genera and 880 species, most abundant in South Africa and Australia.

Pistils 3–5, distinct; fruit fleshy, capsular. 1. *Xanthoxylum*.
Pistil 1, 2-celled; fruit a samara. 2. *Ptelea*.

1. XANTHÓXYLUM L. Sp. Pl. 270. 1753.

Trees or shrubs with alternate odd-pinnate leaves, the twigs and petioles commonly prickly. Flowers axillary or terminal, cymose, whitish or greenish, mostly small. Sepals 4 or 5, or none. Petals 4 or 5, imbricated. Staminate flowers with 4 or 5 hypogynous stamens. Pistillate flowers with 2–5 distinct pistils, rarely with some stamens. Carpels 2-ovuled. Pods fleshy, 2-valved, 1–2-seeded. Seeds oblong, black and shining. [Greek, yellow-wood.]

About 110 species, natives of temperate and tropical regions. In addition to the following 2 others occur in the Southern States.

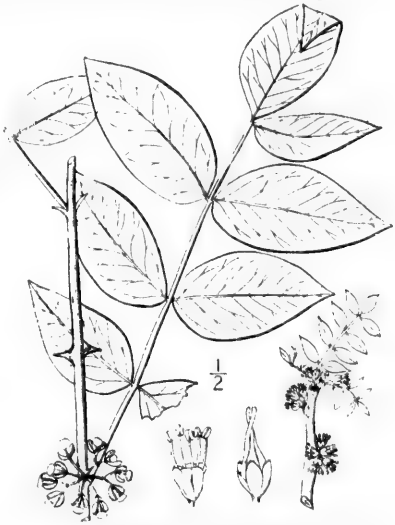
Flowers in small sessile axillary cymes; calyx none. 1. *X. Americanum*.
Flowers in large terminal compound cymes; calyx present. 2. *X. Clava-Herculis*.

1. Xanthoxylum Americànum Mill. Prickly Ash. Toothache-tree. (Fig. 2269.)

Xanthoxylum Americanum Mill. Gard. Dict. Ed. 8, no. 2. 1768.

A shrub, or small tree, reaching a maximum height of about 25°, and a trunk diameter of 6′. Leaves alternate, odd-pinnate, pubescent when young, becoming glabrous or nearly so when old; leaflets 5–11, ovate, opposite, dark green above, lighter beneath, nearly sessile, 1½′–2′ long, crenulate or entire, acutish; flowers greenish, about 1½″ broad, in sessile axillary cymes, borne on the wood of the previous season and appearing before the leaves; pedicels slender; calyx none; petals 4 or 5; pistils 2–5; capsules black, ellipsoid, about 2″ long, on short stipes, 1–2-seeded.

In woods and thickets, Quebec to Virginia, especially along the mountains, west to western Ontario, Minnesota, Nebraska and Missouri. Wood soft, light brown; weight per cubic foot 35 lbs. April–May.



2. Xanthoxylum Clàva-Hérculis L. Southern Prickly Ash. Sea Ash. Pepper-wood. (Fig. 2270.)

X. Clava-Herculis L. Sp. Pl. 270. 1753.
X. Carolinianum Lam. Encycl. 2: 39. 1786.

A small, very prickly tree, with a maximum height of 45° and trunk diameter of 9′, the prickles supported on cushions of cork sometimes 8′ broad. Leaves alternate, odd-pinnate, glabrous, shining above, dull beneath; leaflets 5–17, obliquely ovate, nearly sessile, 1½′–3′ long, acute, crenulate; flowers greenish-white, in large terminal cymes, appearing before the leaves; sepals 4 or 5; petals 4 or 5; pistils 2 or 3; capsules about 2″ long, sessile.

Along streams, coast of southern Virginia to Florida, west to Texas and Arkansas. Wood light brown; weight per cubic foot 31 lbs. June.

2. PTÈLEA L. Sp. Pl. 118. 1753.

Shrubs or small trees, without prickles, the bark bitter. Leaves 3–5-foliolate, with entire or serrulate leaflets. Flowers greenish white, polygamous, corymbose-paniculate. Calyx 4–5-parted, the lobes imbricated. Petals 4 or 5, much longer than the calyx, also imbricated. Stamens 4 or 5, alternate with the petals; filaments hairy on the inner side, present in the pistillate flowers but the anthers abortive or wanting. Ovary flattened, 2-celled (rarely 3-celled). Fruit a nearly orbicular samara, 2-winged (rarely 3-winged), indehiscent. Cells 1-seeded. Seed oblong-ovoid. [Greek, Elm.]

About 6 species, natives of the United States and Mexico.

1. Ptelea trifoliàta L. Three-leaved Hop-tree. Shrubby Trefoil. (Fig. 2271.)

Ptelea trifoliata L. Sp. Pl. 118. 1753.

A shrub or small tree, with a maximum height of about 20° and trunk diameter of 6′. Leaves long-petioled, 3-foliolate, pubescent when young, glabrate when old; leaflets ovate or oval, 2′–5′ long, sessile, crenulate, acute or obtuse, the lateral ones somewhat oblique, the terminal one more or less cuneate at the base; flowers about 5″ broad, in terminal compound cymes; odor disagreeable; sepals ½″ long, obtuse; petals about 3″ long, oblong; samara 8″–9″ in diameter, the wing membranous and reticulated, emarginate, tipped with the minute persistent style or this finally deciduous.

In woods, Long Island to Florida, west to southern Ontario, Minnesota, Texas and northern Mexico. The fruit is bitter and has been used as a substitute for hops. The foliage has an unpleasant odor. Wood light brown; weight per cubic foot 43 lbs. Called also Wafer-ash, Swamp-Dogwood, Wingseed. June.

Family 55. SIMARUBÀCEAE DC. Bull. Soc. Philom. 2: 209. 1811.

AILANTHUS FAMILY.

Trees or shrubs, with bitter bark, and mainly alternate and pinnate not punctate leaves. Stipules minute or none. Inflorescence axillary, paniculate or racemose. Flowers regular, dioecious or polygamous. Calyx 3–5-lobed or divided. Petals 3–5. Disk annular or elongated, entire or lobed. Stamens of the same number as the petals, or twice as many; anthers 2-celled. Ovaries 2–5, or single and 2–5-lobed, 1–5-celled; styles 1–5. Seeds generally solitary in the cells; embryo straight or curved.

About 27 genera and 145 species, natives of warm or tropical regions, distinguished from RUTACEAE mainly by their non-punctate foliage.

1. AILÁNTHUS Desf. Mem. Acad. Paris, 1786: 265. *pl. 8.* 1789.

Large trees, with odd-pinnate leaves, and terminal panicles of greenish-white polygamous flowers. Calyx short, 5-cleft, the lobes imbricated. Petals 5, spreading, valvate. Disk 10-lobed. Staminate flowers with 10 stamens inserted at the base of the disk. Pistillate flowers with a deeply 2–5-cleft ovary, its lobes flat, cuneate, 1-celled, and 2–3 stamens. Ovules solitary in each cavity. Samaras 2–5, linear, or oblong, membranous, veiny, 1-seeded at the middle. Seed compressed; cotyledons flat, nearly orbicular. [From the Chinese name.]

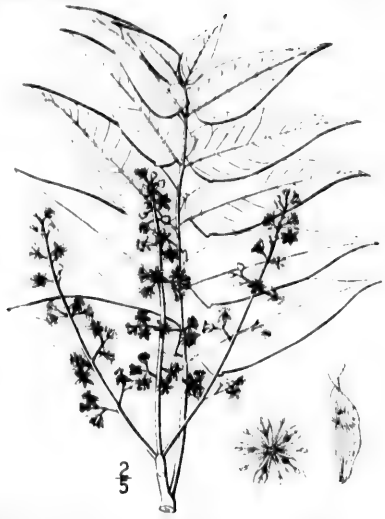
Three species, natives of China and the East Indies. The following has become widely naturalized in eastern North America.

1. Ailanthus glandulòsa Desf.
Tree-of-Heaven. Ailanthus.
(Fig. 2272.)

Ailanthus glandulosa Desf. Mem. Acad. Paris, 1786: 265. 1789.

A tree, 40°–90° high. Leaves 1°–3° long, petioled, glabrous, odd-pinnate; leaflets 13–41, opposite or nearly so, stalked, ovate or ovate-lanceolate, cordate or truncate and often oblique at the base, acute or acuminate at the apex, entire, or with 1–4 blunt teeth near the base; flowers greenish, about 3″ broad, pedicelled, the staminate ones ill-scented; samaras twisted, nearly 2′ long, very conspicuous on the pistillate tree in autumn.

Escaped from cultivation, along roadsides and in fields, spreading extensively by suckers, and seeding freely in some localities, southern Ontario and in the eastern United States. Called also Chinese Sumach. Naturalized from China. June–July.



Family 56. **POLYGALÀCEAE** Reichenb. Consp. 120. 1828.

MILKWORT FAMILY.

Herbs, rarely shrubs or small trees in tropical regions, with alternate, or sometimes opposite or verticillate leaves; stipules none. Flowers racemose, spicate, or solitary and axillary. Pedicels generally 2-bracted at the base. Flowers perfect, irregular. Sepals 5, the two lateral ones (wings) large, colored, the others smaller. Petals 3 (or 5), hypogynous, more or less united into a tube, the lower one often crested. Stamens generally 8, united in 1 or 2 sets. Ovary 2-celled; style simple; stigma curved, dilated or lobed; ovules 1 in each cavity, anatropous. Fruit mainly capsular. Seeds generally caruncled, often hairy; embryo straight.

About 10 genera and 750 species, widely distributed in temperate and tropical regions.

1. POLÝGALA L. Sp. Pl. 701. 1753.

Herbs or shrubs, with alternate opposite or verticillate leaves. Flowers racemose, spicate, or capitate, rarely solitary and axillary, sometimes also cleistogamous and subterranean. Sepals very unequal, the two lateral ones large and petaloid. Petals 3, united into a tube which is split on the back, and more or less adnate to the stamens. Stamens 8 or 6, monadelphous below, or diadelphous; capsule membranous, compressed, dehiscent along the margin. Seeds 1 in each cavity, generally hairy. [Greek, much milk.]

A genus of about 260 species, of wide geographic distribution. Besides the following, about 36 others occur in the southern and western parts of North America.

* Flowers in corymbed spike-like racemes at the summit of the stem, yellow.

Basal leaves long, narrow, acuminate. 1. *P. cymosa.*
Basal leaves spatulate, or obovate. 2. *P. ramosa.*

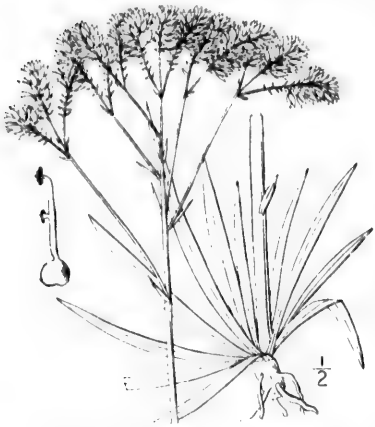
* * Flowers in solitary spikes or spike-like racemes, terminating the stem and branches.

Basal leaves spatulate, or obovate; flowers orange yellow. 3. *P. lutea.*
Basal leaves inconspicuous, or wanting; flowers not yellow.
  Leaves, at least the lower, verticillate; spikes 4″–9″ thick, blunt; flowers purple to greenish white.
    Spikes sessile, or nearly so; wings deltoid. 4. *P. cruciata.*
    Spikes peduncled; wings lanceolate-ovate. 5. *P. brevifolia.*
  Leaves verticillate and alternate; spikes 2″–3″ thick, acute.
    Verticillate leaves predominating; spikes dense; flowers green to purplish. 6. *P. verticillata.*
    Alternate leaves predominating; spikes loose, long; flowers more purple. 7. *P. ambigua.*
  Leaves all alternate.
    Petals united into a cleft tube, 3″–4″ long; flowers pink. 8. *P. incarnata.*
    Petals not conspicuously united into a tube.
      Spikes ovoid to globose.
        Bracts persistent; flowers rose-purple to white.
          Spikes blunt; wings broadly ovate. 9. *P. viridescens.*
          Spikes acutish; wings narrowly ovate or elliptic. 10. *P. Curtissii.*
        Bracts deciduous; flowers rose-purple. 11. *P. Mariana.*

Spikes cylindric.
Leaves oblanceolate to linear, 2″–6″ long; flowers greenish to purplish. 12. *P. Nuttallii.*
Leaves lanceolate, 1′–2′ long, flowers white or greenish. 13. *P. Senega.*
Spikes elongated-conic; flowers white. 14. *P. alba.*

* * * **Flowers distinctly racemose, rose or purple.** 15. *P. polygama.*

* * * * **Flowers 1–4, large, axillary, but apparently terminal, rose-purple to white.** 16. *P. paucifolia.*

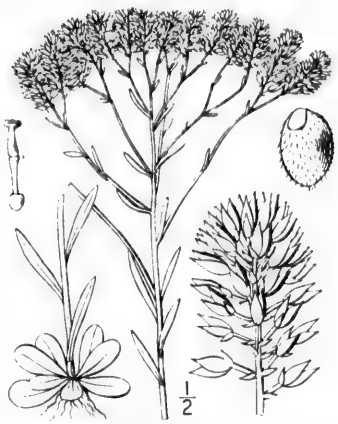


1. Polygala cymòsa Walt. Tall Pine-barren Milkwort. (Fig. 2273.)

Polygala cymosa Walt. Fl. Car. 179. 1788.
Polygala acutifolia T. & G. Fl. N. A. 1: 128. 1838.

Stem erect, glabrous, 2°–3° high, simple, slightly angular; roots fibrous. Basal leaves elongated-linear, attenuate at the apex, 2′–3′ long, 2″–3″ wide, entire, densely tufted; stem-leaves linear-subulate, bract-like, 5″–8″ long; inflorescence a simple or compound corymb of spike-like racemes; pedicels 1″–2″ long; bracts persistent; flowers yellow, drying greenish black; seed globose, minute, nearly glabrous; caruncle none.

In wet pine barrens, Delaware to Florida, west to Louisiana. May–July.



2. Polygala ramòsa Ell. Low Pine-barren Milkwort. (Fig. 2274.)

P. corymbosa Nutt. Gen. 2: 89. 1818. Not Michx. 1803.
Polygala ramosa Ell. Bot. S. C. & Ga. 2: 186. 1822.

Glabrous, stems tufted or single from fibrous roots, 6′–16′ high, simple. Stem-leaves linear-oblong, obtuse, 6″–10″ long, 1″–2″ wide; basal leaves much broader and often larger, spatulate or obovate; inflorescence a terminal compound corymb, 3′–6′ broad, of numerous peduncled spike-like racemes; flowers citron-yellow, 1½″ long, drying dark green; pedicels 1″ long or less; wings oblong, acuminate; crest minute; seed hairy, twice to thrice the length of the caruncle.

In low pine barrens, Delaware to Florida, west to Louisiana. June–Sept.

3. Polygala lùtea L. Orange Milkwort. Wild Bachelor's Button. (Fig. 2275.)

Polygala lutea L. Sp. Pl. 705. 1753.

Glabrous; stems tufted from fibrous roots, erect or ascending, or at length divaricately branched, 6′–12′ high. Stem-leaves oblong-lanceolate, acute or obtuse, 8″–15″ long, 2″–4″ wide, entire; basal leaves broader and often larger, obovate or spatulate, obtuse; spike-like racemes terminal, solitary, ovoid or oblong, very dense, ½′–1½′ long, 6″–9″ thick, obtuse; flowers 2″–3″ long, orange-yellow, preserving their color in drying; pedicels 1″–2″ long; wings oblong-ovate, abruptly acuminate; crest of the corolla-tube minute; caruncle-lobes linear, about equalling the hairy seed, or shorter.

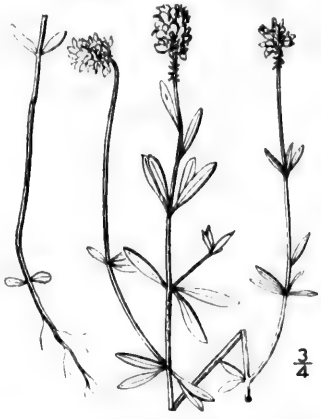
In pine-barren swamps, Babylon, Long Island, New Jersey, south to Florida, west to Louisiana. June–Oct.

4. Polygala cruciàta L. Cross-leaved or Marsh Milkwort. (Fig. 2276.)

Polygala cruciata L. Sp. Pl. 706. 1753.

Erect, glabrous, 4′–16′ high, at length freely branching above; stem square or slightly wing-angled. Basal leaves none; those of the stem and branches verticillate in 4's, or a few of them scattered, linear or oblanceolate, ½′–1½′ long, 1″–2″ wide, entire, obtuse, mucronulate, the lower smaller; spike-like racemes oval, obtuse, 4″–9″ thick, sessile or short-peduncled; pedicels slender, 1½″–2″ long; bracts persistent; flowers purple, greenish or white; wings triangular-ovate, sessile, somewhat cordate, acute, acuminate or awn-pointed, 1½″–3″ long, much exceeding the pods; crest of the corolla minute; seed oblong, slightly hairy, about equalling the caruncle.

In sandy swamps, Maine to Florida, west to Minnesota and Louisiana, but wanting in some districts in the interior, quite common along the coast. July–Sept.



5. Polygala brevifòlia Nutt. Short-leaved Milkwort. (Fig. 2277.)

Polygala brevifolia Nutt. Gen. 2: 89. 1818.

Resembling the preceding species, but lower, more slender and weaker. Leaves shorter, often scattered on the branches and upper part of the stem; spikes smaller (3″–5″ thick), on slender peduncles; wings ovate or ovate-lanceolate, obtuse or mucronulate.

In sandy swamps, coast of Rhode Island to Florida and Alabama. Summer.

6. Polygala verticillàta L. Whorled Milkwort. (Fig. 2278.)

Polygala verticillata L. Sp. Pl. 706. 1753.

Glabrous, very slender, 6′–12′ high, usually branched, the branches often opposite. Basal leaves none; stem-leaves linear, 3″–15″ long, ½″–2″ wide; acute, entire, punctate, mucronulate, mostly verticillate in 4's or 5's, with some scattered ones on the stem or branches; spikes conic, long-peduncled, acute, 2″ thick at the base, very dense, 4″–10″ long; flowers greenish or purplish; pedicels about ½″ long; wings broadly oval, distinctly clawed, shorter than the pod; crest of the corolla manifest; seed oblong, hairy, twice the length of the caruncle; bracts deciduous.

In dry or moist soil, mostly in fields, southern Quebec and Ontario to Minnesota, south to Florida and Mexico. Ascends to 2500 ft. in Virginia. June.–Nov.

7. Polygala ambigua Nutt. Loose-spiked Milkwort. (Fig. 2279.)

Polygala ambigua Nutt. Gen. 2: 89. 1818.

Polygala verticillata var. *ambigua* Wood, Bot. & Flor. 80. 1870.

Resembling the preceding species, but often taller, 5′–16′ high, very slender. Lower stem-leaves commonly verticillate, but the others all alternate; spikes long, loose, the lower flowers often quite distant; peduncles often several inches long; flowers rather larger; wings purple or purplish, nearly circular in outline; mature capsule hardly longer than the wings, which are appressed to it; seed hairy.

In dry soil, New Jersey and Pennsylvania to Georgia, Tennessee and Louisiana.

8. Polygala incarnàta L. Pink Milkwort. (Fig. 2280.)

Polygala incarnata L. Sp. Pl. 701. 1753.

Erect, glabrous, glaucous, very slender, 1°–2° high, simple, or sparingly branched. Basal leaves none; stem-leaves distant, linear or subulate, sessile, 1″–6″ long, rarely wanting; spike terminal, dense, 1′–1½′ long, 2″–4″ thick; pedicels ¼″ or less long; bracts minute or none; flowers pink or rose, 5″–6″ long; corolla-tube very slender, 3″–4″ long, 2–5 times the length of the wings, its keel prominently crested; wings cuspidate; seed hairy, the caruncle-lobes enveloping its beaked extremity.

In dry soil, southern New Jersey and Pennsylvania to southern Ontario and Wisconsin, south to Florida, Arkansas and Mexico. Summer.

9. Polygala viridéscens L. Field or Purple Milkwort. (Fig. 2281.)

Polygala viridescens L. Sp. Pl. 705. 1753.
Polygala sanguinea L. Sp. Pl. 705. 1753.

Erect, 6′–15′ high, glabrous, at length branching above, leafy. Stem somewhat angled; basal leaves none; stem-leaves oblong, or linear-oblong, 8″–15″ long, 1″–2″ wide, obtuse or acute, mucronul. heads globose, becoming oval, 4″–6″ thick, obtuse; pedicels about ½″ long; flowers rose-purple, greenish, or sometimes white; wings sessile, sometimes slightly cordate, ovate, exceeding the pod; bracts generally persistent on the elongating axis; seed obovoid, hairy, about the length of the caruncle; crest minute.

In fields and meadows, southern Ontario to eastern New England, south to North Carolina, west to Minnesota, Arkansas and Louisiana. June–Sept. The contrast between the green-flowered and purple-flowered forms is striking where the two grow together.

10. Polygala Curtíssii A. Gray. Curtiss' Milkwort. (Fig. 2282.)

Polygala Curtissii A. Gray, Man. Ed. 5, 121. 1867.

Erect, slender, 8′–10′ high, much resembling the preceding species and the following; heads globose or rarely elongated, blunt, loosely flowered, 4″–6″ thick; bracts persistent, mainly shorter than the slender pedicels; wings oblong, clawed, nearly erect, twice the length of the pod; seed obovoid, very hairy, apiculate; caruncle minute, much shorter than the seed.

In dry soil, Maryland to Kentucky and Georgia. Aug.–Sept.

11. Polygala Mariàna Mill. Maryland Milkwort. (Fig. 2283.)

Polygala Mariana Mill. Gard. Dict. no. 6. 1768.
Polygala fastigiata Nutt. Gen. 2: 89. 1818.

Slender, glabrous, 6′–16′ high, at length much branched above. Basal leaves none; stem-leaves linear, 3″–9″ long, about 1″ wide, entire, mostly acute, mucronulate; heads globose or slightly longer than thick, obtuse, 3″–4″ wide; pedicels slender, 1½″–2″ long; flowers rose-purple; wings ovate-oblong or obovate, pointed, narrowed at the base, slightly longer than the pod; bracts deciduous from the elongating axis; caruncle-lobes embracing the smaller extremity of the slightly hairy obovoid seed; corolla minutely crested.

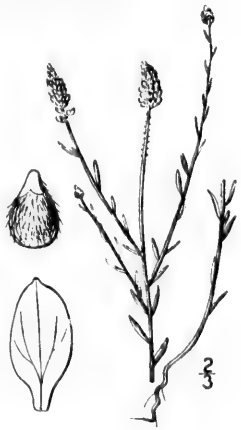
In dry soil, southern New Jersey and Delaware to Florida, west to Kentucky and Louisiana. July–Sept.

12. Polygala Nuttàllii T. & G. Nuttall's Milkwort. (Fig. 2284.)

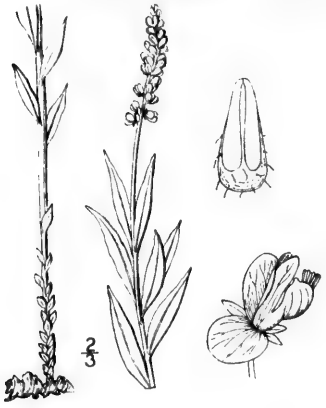
Polygala sanguinea Nutt. Gen. 2: 88. 1818. Not L. 1753.
Polygala Nuttallii T. & G. Fl. N. A. 1: 670. 1840.

Glabrous, erect, slender, 4′–7′ high, branching above. Basal leaves none; stem-leaves numerous, linear or linear-oblong, 3″–8″ long, ½″–1″ wide, entire, obtuse or acutish; spikes cylindric or oblong, about 2″ thick, 3″–6″ long, the floral axis elongating as the fruits fall away from below; pedicels ½″ long or less; bracts subulate, persistent; flowers greenish or yellowish-purple, 1″ long; seed obovoid, very hairy, longer than the caruncle; wings oblong to oval, about equalling the pod; crest very small.

In dry sandy soil in open places, eastern Massachusetts to North Carolina, west to Alabama and Missouri. Aug.–Sept.



13. Polygala Sénega L. Seneca Snakeroot. Mountain Flax. (Fig. 2285.)



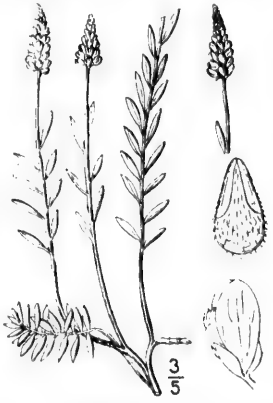
Polygala Senega L. Sp. Pl. 704. 1753.

Glabrous or nearly so, stems several, from woody rootstocks, erect or ascending, 6′–12′ high, simple, or sparingly branched above. Leaves alternate, lanceolate or oblong-lanceolate, sessile, 1′–2′ long, 3″–4″ wide, serrulate, the lowest much smaller and scale-like; spike terminal, short-peduncled, dense, acute, 1′–2′ long; flowers 1½″ long, white or tinged with green; pedicels less than ½″ long; wings orbicular-obovate, concave; crest of the corolla short, few-lobed; seed hairy, slightly longer than the lobes of the caruncle.

In rocky woods, New Brunswick, western New England to Minnesota and the Canadian Rocky Mountains, south to North Carolina along the Alleghanies and to Missouri. May–June.

Polygala Sénega latifólia T. & G. Fl. N. A. 1: 131. 1838. Stem taller, often branched above; leaves ovate or ovate-oblong, 2′–4′ long, acuminate, acute at the base. Maryland and Pennsylvania to Tennessee and Michigan.

14. Polygala álba Nutt. White Milkwort. (Fig. 2286.)



Polygala alba Nutt. Gen. 2: 87. 1818.
Polygala Senega var. *tenuifolia* Pursh, Fl. Am. Sept. 750. 1814. Not *P. tenuifolia* Willd. 1803.

Glabrous, stems numerous, erect from hard woody rootstocks, slender, 6′–15′ high. Leaves alternate, narrowly linear, acute, 3″–12″ long, ½″–1″ wide, their margins entire and revolute, the lower somewhat broader and shorter, clustered; spike terminal, long-peduncled, dense, 1′–2′ long; flowers 1″–1½″ long, white; pedicels less than ½″ long; wings oblong-ovate, slightly concave; crest of the corolla short; seeds silky, about twice the length of the caruncle-lobes.

Prairies, Nebraska and Kansas to Texas and Mexico, west to New Mexico and Arizona. May–July.

15. Polygala polýgama Walt. Racemed Milkwort. (Fig. 2287.)

Polygala polygama Walt. Fl. Car. 179. 1788.

Glabrous; stems numerous, simple, 4′–20′ high, erect from a deep slender biennial root. Stem-leaves crowded, oblong or oblanceolate, obtuse, mucronulate, 8″–12″ long, 1″–2″ wide, entire, the lower gradually smaller; basal leaves spatulate, sometimes smaller; raceme terminal, loose, 1′–4′ long; pedicels spreading or recurved, 1″–2″ long; flowers purple or rose, rarely nearly white, showy, 2″–3″ long; wings broadly obovate; crest of the corolla large, laciniate; stamens 8; subterranean branches horizontal, bearing numerous, nearly sessile cleistogamous flowers; seeds hairy, longer than the caruncle-lobes.

In dry soil, Nova Scotia to the Lake of the Woods, south to Florida and Texas. Local. June–July.

† **16. Polygala paucifòlia** Willd. Fringed Milkwort. Flowering Wintergreen. Gay-wings. (Fig. 2288.)

Polygala paucifolia Willd. Sp. Pl. 3: 880. 1800.
Polygala uniflora Michx. Fl. Bor. Am. 2: 53. 1803.

Glabrous, perennial from slender prostrate stems and rootstocks 6′–15′ long. Flowering branches erect or ascending, 4′–7′ high; leaves of the summits of the stems clustered, ovate or oblong, 1′–1½′ long, 7″–10″ wide, acute, rough-margined, on petioles 2″–4″ long; those of the lower part of the shoots successively smaller, distant, the lowest scale-like; flowers 1–4, axillary to the upper leaves, 7″–10″ long, slender-peduncled, rose-purple or rarely white, showy; wings obovate; crest of the corolla beautifully fimbriate; seed slightly shorter than the caruncle; cleistogamous subterranean flowers few, on short lateral branches.

In moist rich woods, New Brunswick and Anticosti to the Saskatchewan, south to Georgia and Illinois. Ascends to 2500 ft. in Virginia. May–July.

Family 57. **EUPHORBIÀCEAE** J. St. Hil. Expos. Fam. 276. 1805.*

SPURGE FAMILY.

Monoecious or dioecious herbs, shrubs or trees, with acrid often milky sap. Leaves opposite, alternate or verticillate, entire or toothed, sessile or petioled, sometimes with glands at the base; stipules present, obsolete or wanting. Inflorescence various. Flowers apetalous or petaliferous, sometimes much reduced and subtended by an involucre which resembles a calyx (*Euphorbia*), the number of parts in the floral whorls often different in the staminate and pistillate flowers. Stamens few, or numerous, in one series or many; filaments separate or united. Ovary usually 3-celled; ovules 1 or 2 in each cavity, pendulous; styles as many as the cavities of the ovary, simple, divided, or many-cleft. Fruit a mostly 3-lobed capsule, separating, often elastically, into 3 2-valved carpels from a persistent axis at maturity. Seeds anatropous; embryo straight, or slightly curved, in fleshy or oily endosperm, the broad cotyledons almost filling the seed-coats.

About 210 genera and 4000 species, of wide geographic distribution.

Flowers not in an involucre, with a true calyx.
- Ovules 2 in each cavity of the ovary. — 1. *Phyllanthus.*
- Ovule 1 in each cavity of the ovary.
  - Plants clothed with stellate pubescence.
    - Ovary, and dehiscent capsule 2–4-celled, mostly 3-celled. — 2. *Croton.*
    - Ovary, and capsule 1-celled, achene-like. — 3. *Crotonopsis.*
  - Plants variously pubescent with simple hairs.
    - Inflorescence spicate, racemose, or of axillary clusters.
      - Flowers with petals. — 4. *Ditaxis.*
      - Flowers without petals.
        - Styles many-cleft. — 5. *Acalypha.*
        - Styles simple, somewhat united at the base. — 6. *Tragia.*
    - Inflorescence cymose. — 8. *Jatropha.*
  - Plants glabrous, or nearly so.
    - Inflorescence racemose, somewhat panicled; pistillate flowers above the staminate. — 7. *Ricinus.*
    - Inflorescence spicate; pistillate flowers below the staminate. — 9. *Stillingia.*

Flowers in an involucre, the calyx represented by a minute scale at the base of the filament-like pedicel. — 10. *Euphorbia.*

1. PHYLLÁNTHUS L. Sp. Pl. 981. 1753.

Annual or biennial herbs (some tropical species shrubs or trees). Stems wiry. Leaves alternate, entire, often numerous, and so arranged as to appear like the leaflets of a compound leaf. Flowers monoecious, apetalous, sessile or pedicelled, a staminate and a pistillate one together in the axils or on the edges of leaf-like branches. Calyx mostly 5–6-parted, the lobes imbricated. Stamens usually 3, the filaments more or less united, rarely separate. Ovary 3-celled; ovules 2 in each cavity; styles 3, each 2-cleft. Capsule globose, each carpel 2-seeded; endosperm of the seed fleshy. [Greek, leaf-flower, the blossoms in some species being seated on leaf-like flattened branches.]

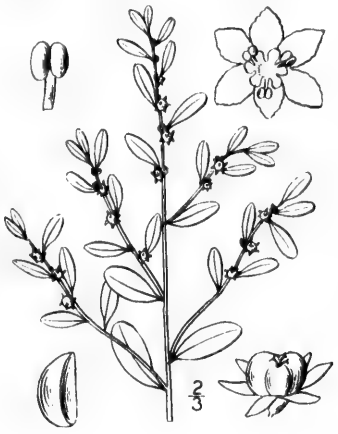
More than 400 species, natives of the tropical and temperate zones of both hemispheres.

* Text contributed by DR. JOHN K. SMALL.

1. Phyllanthus Carolinénsis Walt. Carolina Phyllanthus. (Fig. 2289.)

Phyllanthus Carolinensis Walt. Fl. Car. 228. 1788.

Phyllanthus obovatus Willd. Sp. Pl. 4: 574. 1805.



Annual, dark green, glabrous. Stem slender, erect, or ascending, 4′–20′ high, simple or branched, the branches 2-ranked; leaves obovate, or oblong, 3″–10″ long, obtuse, narrowed to a very short petiole, or subsessile; flowers inconspicuous, nearly sessile in the axils; calyx 6-parted, its lobes linear, or oblong; stamens 3; styles 3, each 2-cleft; glands of the pistillate flower more or less united; capsule about 1″ in diameter; seeds nearly ½″ long, marked with lines and minute black papillae.

In sandy or gravelly soil, eastern Pennsylvania to Illinois, Florida, Texas and Central America. May–Oct.

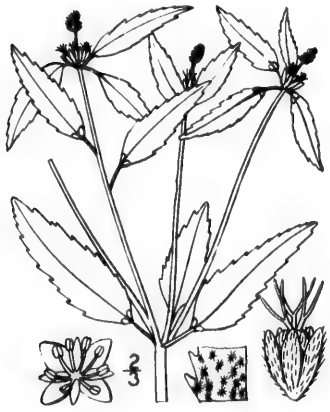
2. CRÒTON L. Sp. Pl. 1004. 1753.

Herbs or shrubs, monoecious or rarely dioecious, strong-scented, stellate-pubescent, more or less glandular. Leaves mostly alternate, entire, toothed or lobed, sometimes with 2 glands at the base of the blade. Flowers in axillary or terminal clusters, often spicate or racemose. Staminate flowers uppermost; calyx 4–6-parted (usually 5-parted); petals usually present, but small or rudimentary, alternating with glands; stamens 5 or more, inflexed. Pistillate flowers clustered below the staminate; calyx 5–10-parted; petals usually wanting; ovary mostly 3-celled; ovule 1 in each cavity; styles once, twice or many times 2-cleft. Capsule splitting into 2–4 (usually 2) 2-valved carpels. Seeds 1 in each carpel, smooth, or minutely pitted. Embryo straight in the fleshy endosperm. [The Greek name of the Castor-oil plant.]

About 600 species, mostly of warm and tropical regions, a few in the temperate zones; some of high medicinal value.

Plants monoecious.
- Leaves toothed; staminate calyx 4-lobed, pistillate 5-lobed. — 1. *C. glandulosus.*
- Leaves entire; staminate calyx 3–5-lobed, pistillate 5–12-lobed.
  - Capsules clustered, erect, depressed-globose, 3″–3½″ broad. — 2. *C. capitatus.*
  - Capsules mostly solitary, nodding, ovoid, or oblong-ovoid, 2″–2½″ long. — 3. *C. monanthogynus.*

Plant dioecious. — 4. *C. Texensis.*



1. Croton glandulòsus L. Glandular Croton. (Fig. 2290.)

Croton glandulosus L. Amoen. Acad. 5: 409. 1760.

Annual, monoecious, usually dark green, rough with stellate hairs, and somewhat glandular. Stem erect or assurgent, rather slender, 8′–2½° high, corymbosely branched, or nearly simple; leaves oblong, linear-oblong or ovate, ½′–3′ long, coarsely serrate, bearing 2 glands at the base of the blade; petiole shorter than the blade; flower-clusters terminal or axillary, the staminate in spikes, with a 4-parted calyx, 4 petals, a 4-rayed glandular disk and 8 stamens; pistillate flowers several at the base of the staminate, with 5 sepals, rudimentary petals, and 3 2-cleft styles; capsule subglobose, about 2½″ in length; seeds oblong, minutely wrinkled.

In sandy soil, Virginia to Iowa and Kansas, south to Florida and Central America. Also in the West Indies and South America. March–Dec.

2. Croton capitàtus Michx. Capitate Croton. Hogwort. (Fig. 2291.)

Croton capitatus Michx. Fl. Bor. Am. **2**: 214. 1803.

Annual, monoecious, silvery green, densely stellate-pubescent. Stem erect or assurgent, usually corymbosely branched above; leaves lanceolate, oblong, or rarely ovate, entire, or often undulate, obtuse or cordate at the base; lower petioles often equalling or exceeding the blades, flowers clustered at the ends of the branches, the staminate racemose, with a 5-parted calyx, 5 petals, and 10–14 stamens; pistillate flowers several, sessile, with 7–12 sepals, no petals, the styles twice or thrice cleft; capsule depressed-globose, 3″–3½″ in diameter; seeds gray, or variegated, turtle-shaped, smooth, or minutely pitted.

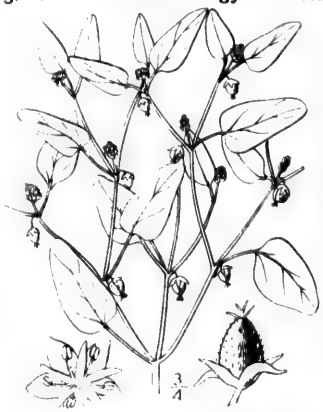
In dry soil, New Jersey to Iowa, Georgia and Texas. May–Oct.

3. Croton monanthógynus Michx. Single-fruited Croton. (Fig. 2292.)

C. monanthogynus Michx. Fl. Bor. Am. **2**: 215. 1803.

Annual, monoecious, silvery green, rather densely stellate-pubescent and somewhat glandular. Main stem slender, 4′–8′ high, simple, or sparingly branched above, topped by a 3–5-rayed umbel with rays 5′–15′ long, forked or umbellately branched; leaves ovate or oblong, 5″–1½′ long, entire or undulate, obtuse or subcordate at the base; petioles usually about half as long as the blades; staminate flowers clustered at the ends of erect peduncles, with 3–5 unequal calyx-segments, the same number of petals and scale-like glands, and 3–8 stamens; pistillate flowers mostly solitary, on recurved pedicels, with 5 equal calyx-segments, no petals, 5 glands and 2 sessile 2-cleft stigmas; capsule ovoid or oblong-ovoid, 2″–2½″ long, 1–2-celled; seeds oval or orbicular, variegated, minutely pitted, shining.

In dry soil, North Carolina to Indiana and Kansas, south to Florida and Mexico. June–Oct.



4. Croton Texénsis (Klotzsch.) Muell. Arg. Texas Croton. (Fig. 2293.)

Hendecanadra Texensis Klotzsch, Erichs. Arch. **1**: 252. 1841.

Croton Texensis Muell. Arg. in DC. Prodr. **15**: Part 2, 692. 1862.

Annual, dioecious, often bronze-green, canescent with stellate pubescence. Stem rather slender, erect or assurgent, 8′–2° high, paniculately or corymbosely branched; leaves ovate to linear-oblong, or almost linear, 10″–3½′ long, entire or undulate; petioles mostly shorter than the blades; staminate flowers racemose; pistillate flowers sessile or nearly so in stalked clusters; calyx equally 5-parted, the segments ovate; petals none; glands 5, minute; stamens mostly 10; styles 3, twice or thrice 2-cleft; capsule subglobose, 2½″–3″ in diameter; somewhat muricate; seeds ovoid or oval, variegated, finely reticulated.

In dry soil, South Dakota to Missouri, Alabama and New Mexico. June–Sept.

3. CROTONÓPSIS Michx. Fl. Bor. Am. 2: 185. 1803.

Annual slender silvery-scurfy monoecious herbs with branched stems, narrow alternate or rarely opposite short-petioled leaves, the flowers in terminal and lateral clusters. Staminate flowers uppermost in the clusters, with an equally 5-parted calyx, 5 petals and 5 inflexed stamens opposite the petals, the filaments distinct, enlarged at the summit. Pistillate flowers with a 3–5-parted calyx, no petals, 5 petal-like glands opposite the calyx-segments, and a 1-celled ovary; ovule 1; style twice or thrice cleft. Fruit a small scaly or spiny achene-like capsule. Seed lenticular or terete, longitudinally wrinkled; embryo straight in fleshy endosperm. [Greek, Croton-like.]

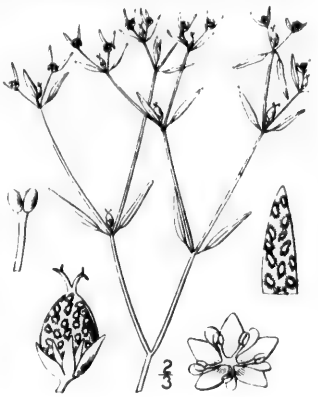
Two known species, natives of the southeastern United States.

1. Crotonopsis linearis Michx. Croton-opsis. (Fig. 2294.)

Crotonopsis linearis Michx. Fl. Bor. Am. 2: 186. *pl. 46.* 1803.

Silvery, covered with peltate somewhat fringed scales, except on the green upper surfaces of the leaves. Stem wiry, 4′–1½° high, much branched; leaves oblong-ovate to linear-lanceolate, ½′–1½′ long, entire; staminate flowers with an equally 5-parted calyx, the petals spatulate; calyx of the pistillate flowers unequally 3–5-parted; achene ovoid-elliptic; seed ovoid, 1″–1½″ long.

In dry sandy soil, New Jersey to Kansas, south to Florida and Texas. July–Sept.



4. DITÁXIS Vahl; Juss. Euphorb. 27. 1824.

Monoecious herbs or shrubs, perennial by rootstocks, silky or pilose, the sap purplish. Leaves alternate, entire, or rarely toothed, often strongly nerved. Flowers in axillary or axillary and terminal clusters, often racemed, usually bracted. Staminate flowers often crowded at the ends of the racemes; calyx 4–5-lobed, the lobes valvate; petals 4 or 5, alternate with the calyx-lobes and with the lobes of the disk; stamens of the same number as the petals or two or three times as many, united into a column. Pistillate flowers with the calyx-lobes imbricated and smaller petals, the ovary 3-celled, each cavity with 1 ovule; styles 3, short, once to thrice cleft. Capsule 3-lobed, depressed, separating into 3 2-valved carpels. Seeds subglobose, wrinkled, or muricate, sometimes crested; embryo straight in the fleshy endosperm. [Greek, double-ranked, in allusion to the stamens.]

About 20 species, natives of temperate and tropical regions.

Flowers in terminal and axillary racemes; leaves sessile. 1. *D. mercurialina.*
Flowers in axillary clusters; leaves short-petioled. 2. *D. humilis.*

1. Ditaxis mercuriálina (Nutt.) Coult. Tall Ditaxis. (Fig. 2295.)

Aphora mercurialina Nutt. Trans. Am. Phil. Soc. (II.) 5: 174. 1833–37.
Argyrothamnia mercurialina Muell. Arg. Linnaea, 34: 148. 1865.
Ditaxis mercurialina Coult. Mem. Torr. Club, 5: 213. 1894.

Stem slender, strict, usually simple, channeled, silky, 4′–2° high. Leaves alternate, ovate to narrowly lanceolate, 10″–2′ long, undulate, sessile, often strongly 3-nerved, glabrate; flowers in terminal and axillary racemes; staminate flowers with lanceolate or linear-lanceolate acute ciliate calyx-segments, and spatulate-oblong undulate petals; pistillate flowers with a 5-parted calyx, the segments lanceolate, spreading, 3 times as long as those of the staminate, petals none; capsule depressed, 3″–4½″ in diameter, somewhat silky, 3-lobed; seeds globose-ovoid, 2″ long, pointed, wrinkled, indistinctly 2-crested.

In dry soil, Kansas and Arkansas to Texas. Lower leaves sometimes oblanceolate. April–July.

2. Ditaxis hùmilis (Engelm. & Gray) Pax. Low Ditaxis. (Fig. 2296.)

Aphora humilis Engelm. & Gray, Bost. Journ. Nat. Hist. **5**: 262. 1847.

Argyrothamnia humilis Muell. Arg. Linnaea, **34**: 147. 1865.

Ditaxis humilis Pax in Engl. & Prantl, Nat. Pfl. Fam. **3**: Abt. 5, 45. 1890.

Stem slender, much branched, pubescent, the branches spreading, 4′–1° long. Leaves alternate, ovate, oblong, obovate or oblanceolate, 5″–15″ long, entire, narrowed into a short petiole; flowers in axillary clusters; staminate flowers with petals a little longer than the 5 calyx-segments and longer than the lobes of the disk; pistillate flowers with a 5-parted calyx and 3 styles each usually twice 2-cleft; capsule short-pedicelled, much depressed, 2″–3″ in diameter, 3–4-lobed; seeds oval-globose, about 1″ long, muricate.

Prairies, Kansas to Louisiana and Texas. March–Sept.

5. ACALÝPHA L. Sp. Pl. 1003. 1753.

Herbs or shrubs, our species annual, monoecious. Stems mostly erect and branched. Leaves alternate, entire or toothed, petioled, stipulate. Flowers in axillary and terminal spikes or spike-like racemes, the staminate cluster peduncled, each flower in the axil of a minute bractlet, with a 4-parted calyx and 8–16 stamens united at their bases. Pistillate flowers subtended by a foliaceous bract which often equals or overtops the staminate, the calyx 3–5-parted, ovary 3-celled; stigmas fringed; petals wanting in both kinds of flowers; capsule usually of 3 2-valved carpels, each 1-seeded. [Greek, nettle.]

About 230 species, mostly tropical and subtropical.

Staminate and pistillate flowers in separate spikes or racemes; capsule spiny. 1. *A. ostryaefolia.*
Staminate and pistillate flowers in the same spike or raceme; capsule smooth.
  Plant not glandular; bract palmately many-lobed, equalling or exceeding the staminate spike. 2. *A. Virginica.*
  Plant glandular; bract many-cleft, shorter than the staminate spike. 3. *A. gracilens.*

1. Acalypha ostryaefòlia Ridd. Hornbeam Three-seeded Mercury. (Fig. 2297.)

Acalypha Caroliniana Ell. Bot. S. C. & Ga. **2**. 645. 1824. Not Walt. 1788.

Acalypha ostryaefolia Riddell, Syn. Fl. W. States, 53. 1835.

Dark green, minutely pubescent. Stem erect, rather stout, simple or branched, 1°–2½° tall. Leaves thin, or membranous, ovate, 2½′–4′ long, short-acuminate, serrate, obtuse or cordate at the base, the petioles often as long as the blades; staminate and pistillate flowers in separate spikes, the bractlets of the staminate minute, those of the pistillate conspicuous, lobed; capsule much depressed, 3-lobed, 1½″–2″ in diameter, spiny; seeds ovoid, 1″ long, wrinkled.

New Jersey to Kansas, Florida and Mexico. June–Nov.

2. Acalypha Virginica L.
Virginia Three-seeded Mercury.
(Fig. 2298.)

Acalypha Virginica L. Sp. Pl. 1003. 1753.

Dark green or becoming purplish, somewhat pubescent. Stem erect or ascending, 3′–2° tall; leaves ovate or elliptic, 10″–4′ long, thin, coarsely serrate except near the base; staminate and pistillate flowers in the same axillary clusters, the staminate spike peduncled, usually included in the large palmately lobed bract; pistillate flowers 1–3 at the base of the staminate peduncle; capsule 3-lobed, subglobose, about 1½″ in diameter, smooth, sometimes slightly pubescent; seeds ovoid, reddish, striate.

In woods and thickets, Ontario and Minnesota, south to Florida and Texas. Occurs at 3000 ft. in Georgia. Upper leaves commonly forming a flat-topped cluster. June–Oct.

3. Acalypha grácilens A. Gray. Slender Three-seeded Mercury. (Fig. 2299.)

Acalypha gracilens A. Gray, Man. 408. 1848.

Acalypha Virginica var. *gracilens* Muell. Arg. Linnaea, 34: 45. 1865.

Pale green, pubescent, often densely glandular. Stem slender, erect, 4′–2½° tall, usually branched, the branches often nearly filiform, spreading or divergent; leaves lanceolate or linear-oblong, 5″–2′ long, usually firm, acutish, serrate, narrowed to a short petiole; staminate and pistillate flowers in the same axillary clusters; staminate spike very slender, usually exceeding the many-cleft bract; pistillate flowers 1 or several; capsule subglobose, about 1½″ in diameter; seeds globose-ovoid, dark red, or gray mottled with red, striate-pitted.

In dry woods and thickets, Rhode Island to Kansas, Florida and Texas. Occurs 2000 ft. in South Carolina. June–Sept.

6. TRAGIA L. Sp. Pl. 980. 1753.

Monoecious herbs, or shrubs, sometimes climbing, usually armed with stiff stinging hairs. Leaves alternate, toothed or somewhat lobed, mostly cordate, petioled; flowers in racemes, or spicate racemes, bracteolate, apetalous; staminate flowers with a 3–5-parted calyx and 1–3 or rarely numerous stamens; pistillate flowers with a 3–8-lobed calyx, the segments entire or pinnatifid, a 3-celled ovary with 1 ovule in each cavity, and 3 styles, often united to above the middle; capsule 3-lobed, separating into 3 2-valved carpels; seeds subglobose: endosperm fleshy. [From Tragus, the Latin name of Hieronymus Bock, 1498–1553, a German botanist.]

About 50 species, mostly natives of tropical regions.

Stems not twining.
- Staminate calyx 4-lobed; stamens 2. — 1. *T. urens.*
- Staminate calyx 3-lobed; stamens 3. — 2. *T. nepetaefolia.*
- Staminate calyx 4–5-lobed; stamens 4 or 5. — 3. *T. ramosa.*

Stems twining. — 4. *T. macrocarpa.*

1. Tragia ùrens L. Eastern Tragia. (Fig. 2300.)

Tragia urens L. Sp. Pl. Ed. 2, 1391. 1763.
Tragia innocua Walt. Fl. Car. 220. 1788.

Perennial, dull green, pilose or hirsute. Stem slender, erect, 4′–15′ tall, branched; leaves obovate or ovate to linear, entire, undulate or toothed, mostly obtuse at the apex, narrowed or subcordate at base, short-petioled or sessile, 5″–2′ long; flowers in terminal or lateral spike-like racemes often 4′ long; staminate flowers with a 4-lobed calyx and 2 stamens; pistillate flowers several at the base of the racemes, with a 5–6-lobed calyx; capsule short-pedicelled, much depressed, 4″–5″ in diameter, sparingly pubescent; seeds subglobose, 2″ long, smooth.

In sandy soil, Virginia to Florida and Texas. May–Aug.

2. Tragia nepetaefòlia Cav. Catnep Tragia. (Fig. 2301.)

Tragia nepetaefolia Cav. Icones 6: 37. *pl.* 557, *f.* 1. 1801.

Perennial, hispid with stinging hairs. Stem slender, erect or reclining, 6′–15′ long; leaves triangular-ovate or lanceolate, 5″–2′ long, dentate-serrate, cordate, short-petioled, the lower sometimes orbicular; racemes 5″–1½′ long, many-flowered; staminate flowers mostly with a 3-lobed calyx and 3 stamens; pistillate flowers with a 5-lobed calyx; capsule much depressed, 3″ in diameter, hirsute; seeds globose, chestnut brown, smooth, 2″ in diameter.

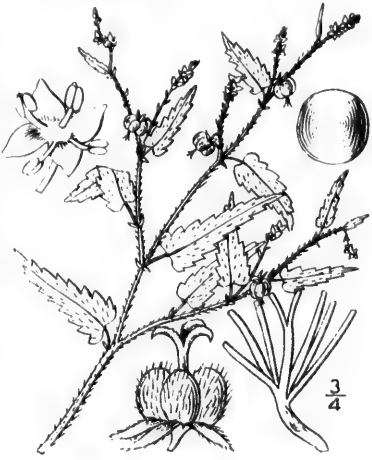
In sandy soil, Kansas to Mexico and New Mexico. May–Oct.

3. Tragia ramòsa Torr. Branching Tragia. (Fig. 2302.)

T. ramosa Torr. Ann. Lyc. N. Y. 2: 245. 1826.
T. stylaris Muell. Arg. Linnaea, 34: 180. 1860.

Perennial, light green, bristly with stinging hairs. Stem slender, usually much branched, the branches sometimes spreading, 2′–12′ long; leaves lanceolate, ovate-lanceolate or triangular-lanceolate, ½′–2′ long, acute at the apex, coarsely and sharply serrate, truncate or cordate at the base, short-petioled; racemes ½′–1½′ long, few-flowered; staminate flowers very short-pedicelled, with a 4–5-lobed calyx and 4–6 stamens; pistillate flowers solitary with a 5-lobed calyx subtended by a 3-lobed bract; capsule much depressed, 3″–4″ in diameter, bristly; seeds globose, 2″ in diameter, orange, more or less variegated.

In dry soil, Missouri to Texas, Colorado and Arizona. July–Aug.



4. Tragia macrocàrpa Willd. Twining or Large-fruited Tragia. (Fig. 2303.)

Tragia cordata Michx. Fl. Bor. Am. 2: 176. 1803. Not Vahl. 1790.
Tragia macrocarpa Willd. Sp. Pl. 4: 323. 1806.

Perennial, twining, slightly hirsute. Stem slender, 10′–4½° long, branched; leaves ovate, 2′–4½′ long, deeply cordate, coarsely dentate-serrate, long-acuminate; petioles mostly shorter than the blades, staminate flowers with a 3-lobed calyx and 3 stamens; pistillate flowers several at the bases of the spikes, short-pedicelled, the calyx 5-lobed; capsule depressed, 6″–8″ in diameter; seeds subglobose, 2½″ long, smooth, variegated.

In dry or rocky soil, Kentucky to Missouri, Florida and Mexico. June–Sept.

7. RÍCINUS L. Sp. Pl. 1007. 1753.

A tall stout monoecious herb, glabrous and glaucous, with alternate large peltate palmately-lobed petioled leaves, and numerous small apetalous greenish flowers in terminal racemes, the pistillate above the staminate. Staminate flowers with a 3–5-parted calyx, the segments valvate, and numerous crowded stamens; filaments repeatedly branched. Pistillate flowers with a caducous calyx, a 3-celled, 3-ovuled ovary, the 3 red styles united at the base, 2-cleft. Capsule subglobose, or oval, smooth or spiny, separating into 3 2-valved carpels. Seeds ovoid or oblong, usually mottled. Embryo straight. Endosperm fleshy and oily. [The Latin name of the plant.]

A monotypic genus of the warmer parts of Africa and Asia.

1. Ricinus commùnis L. Castor-oil Plant. Castor-bean. Palma Christi. (Fig. 2304.)

Ricinus communis L. Sp. Pl. 1007. 1753.

Stem erect, 3°–15° tall, more or less branched, becoming tree-like in warm regions. Leaves nearly orbicular in outline, 4′–2° broad, 6–11-palmately-lobed and peltate, the lobes toothed, acute or acuminate; capsule 6″–8″ in diameter, usually spiny; sometimes smooth; seeds shining, smooth, black, variegated with white, or mottled with gray and brown markings.

In waste places, escaped from cultivation, New Jersey to Florida and Texas. An imposing ornamental plant, and also of medicinal value. Widely naturalized in warm and tropical regions.

8. JÁTROPHA L. Sp. Pl. 1006. 1753.

Monoecious or rarely dioecious perennial stinging bristly herbs, or shrubs, with entire, lobed or divided petioled leaves, the flowers in cymes. Staminate flowers on the upper parts of the cymes, with a corolla-like 5-lobed calyx, 5 petals distinct or united, or none, the stamens usually numerous (5–30) and in several series, their filaments mostly united at the base. Pistillate flowers in the lower forks of the cymes; ovary mostly 3-celled and 3 ovuled; styles united at the base; capsule ovoid or subglobose, easily separating into 2-valved carpels; seeds ovoid or obovoid; embryo straight; endosperm fleshy. [Greek, healing nutriment.]

About 70 species, widely distributed in warm and temperate regions. Besides the following some 4 others occur in the southern States.

1. Jatropha stimulòsa Michx. Spurge Nettle. Tread-softly. (Fig. 2305.)

Jatropha stimulosa Michx. Fl. Bor. Am. 2: 216. 1803.
Jatropha urens var. *stimulosa* Muell. Arg. in DC. Prodr. 15: Part 2, 1101. 1862.

Perennial by a stout root, herbaceous, bright green, armed with stinging hairs. Stem rather slender, erect, simple or branched, 4′–3½° tall; leaves nearly orbicular in outline, 2½′–12′ broad, truncate or cordate at the base, deeply 3–5-lobed, the lobes entire, toothed or pinnatifid; calyx of the staminate flowers salverform, white or pink, 10″–20″ broad; capsule oblong, 5″–8″ long, papillose, wrinkled; seeds oblong-obovoid, 5″–6″ long, smooth, mottled.

In dry sandy soil, Virginia to Florida and Texas. March–Aug.

9. STILLÍNGIA L. Mant. 1: 19. 1767.

Monoecious glabrous herbs or shrubs, with simple or branched stems, alternate or rarely opposite, entire or toothed leaves, often with 2 glands at the base, the flowers bracteolate, in terminal spikes, apetalous, the bractlets 2-glandular. Staminate flowers several together in the axils of the bractlets, the calyx slightly 2–3-lobed; stamens 2–3, exserted. Pistillate flowers solitary in the axils of the lower bractlets; calyx 3-lobed, ovary 2-celled or 3-celled with a solitary ovule in each cavity; styles stout, somewhat united at the base. Capsule 2-lobed or 3-lobed, separating into 2 or 3 two-valved carpels. Seeds ovoid or subglobose. Embryo straight in the fleshy endosperm. [In honor of Dr. B. Stellingfleet, an English botanist.]

About 15 species, mostly of tropical America and the islands of the Pacific Ocean.

1. Stillingia sylvática L. Queen's Delight. Queen-root. (Fig. 2306.)

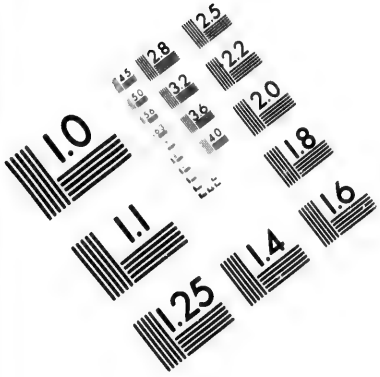
Stillingia sylvatica L. Mant. 1: 126. 1767.

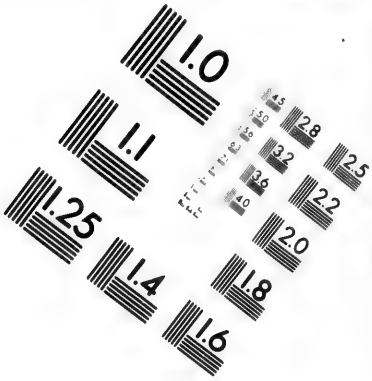
A bright green slightly fleshy perennial herb. Stem rather stout, erect or assurgent, usually branched from the base, 1°–3½° tall. Leaves obovate, oblong or elliptic, 5″–4′ long, obtuse, or subacute, serrate with appressed teeth, often narrowed at the 2-glandular base, sessile; flowers in terminal spikes, lemon-colored, subtended by small bracts furnished with saucer-shaped glands; calyx cup-shaped; petals and glandular disk none; capsule depressed, 5″–7″ in diameter, 3-lobed; seeds ovoid, 3″ long, light gray, minutely pitted and papillose, the base flattened.

In dry soil, Virginia to Florida, Kansas and Texas. Called also Silver-leaf; the root, known as Queen's-root, an alterative. March–Oct.

10. EUPHÓRBIA L. Sp. Pl. 450. 1753.

Monoecious herbs (many tropical species shrubs), with alternate, opposite or verticillate leaves, the inflorescence cymose. Flowers borne in sessile or peduncled, top-shaped or campanulate involucres subtended by bracts, which are often brightly colored. Sinuses of the involucres usually bearing glands, naked or appendaged. Staminate flowers scattered





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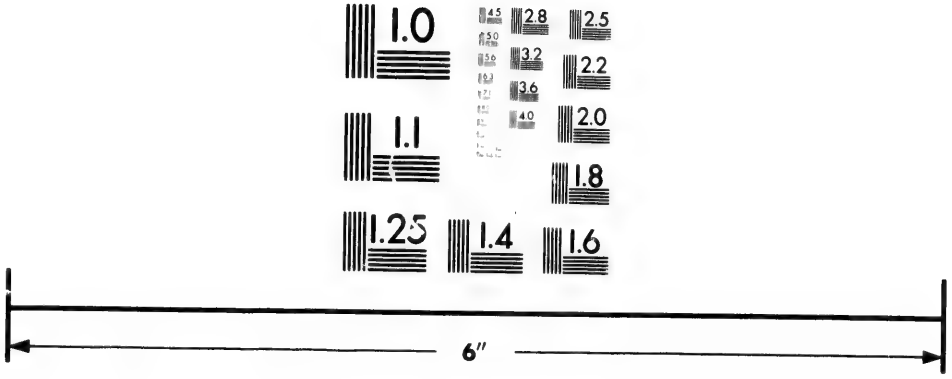

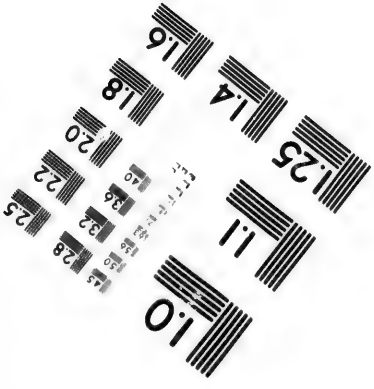

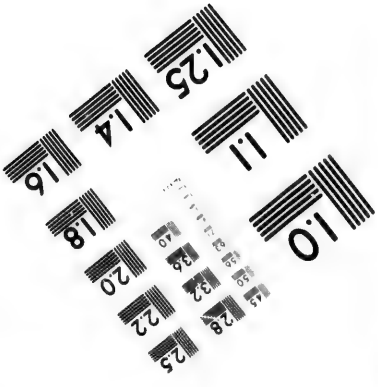

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over the inner surface of the involucre, consisting of a stamen jointed on a filament-like pedicel, which is subtended by a minute bractlet supposed to represent a calyx. Pistillate flower solitary, consisting of a 3-celled ovary at the bottom of the involucre, at length usually exserted on a stalk; styles 3, 2-cleft. Capsule erect or nodding, 3-lobed, separating into 3 2-valved carpels. Seeds sometimes caruncled, often ash-colored, variously pitted, ridged or wrinkled. [Named in honor of Euphorbus, King Juba's physician.]

Species about 700, most abundant in the warmer parts of the temperate zones. Besides the following, some 95 others occur in the southern and western parts of North America.

*** Glands of the involucre with petal-like appendages.**

† Leaves opposite, somewhat inequilateral, their bases more or less oblique.

‡ Leaves entire; seeds smooth.
Plants branched at the base, the branches prostrate.
Seeds 1½″ long. 1. *E. polygonifolia.*
Seeds ½″–¾″ long.
Leaves usually more than twice as long as broad; seeds nearly terete, ¾″ long. 4. *E. Geyeri.*
Leaves usually less than twice as long as broad; seeds obtusely 4-angled, ½″ long. 5. *E. serpens.*
Plants with an erect or ascending stem, branched above, the branches ascending.
Seeds nearly terete, 1″ long; leaves usually flat and straight. 2. *E. petaloidea.*
Seeds 4-angled, ¼″ long; leaves often involute and curved. 3. *E. Nuttallii.*
‡ ‡ Leaves entire; seeds variously roughened.
Plants glabrous. 11. *E. Fendleri.*
Plants canescent. 12. *E. lata.*
‡ ‡ ‡ Leaves serrate or dentate; plants prostrate or spreading.
Herbage glabrous.
Seeds faintly transversely ridged and pitted. 6. *E. serpyllifolia.*
Seeds strongly transversely ridged, not pitted. 7. *E. glyptosperma.*
Herbage pubescent, or puberulent.
Seeds gray or ash-colored, pitted. 10. *E. strictospora.*
Seeds brown or black.
Involucres not split. 8. *E. maculata.*
Involucres split on one side. 9. *E. humistrata.*
‡ ‡ ‡ ‡ Leaves serrate or dentate; plants erect or ascending. 13. *E. nutans.*

† † Leaves opposite, equilateral, their bases not oblique. 14. *E. hexagona.*

† † † Leaves alternate or scattered on the stem, except a whorl subtending the umbel.

Bracts and leaves of the umbel small and green; seeds ovoid, smooth, sparingly pitted. 15. *E. corollata.*

Bracts and leaves of the umbel large, white-margined; seeds ovoid-globose, reticulate-tuberculate. 16. *E. marginata.*

*** * Glands of the involucre naked (without petal-like appendages).**

† Leaves mostly opposite; herbage glabrous.

Plants slender; stems or branches forked.
Annual; stem branched at the base; leaves, or some of them, oblique at the base. 1. *E. polygonifolia.*
Perennial; stems several from a stout root; leaves not oblique at the base. 19. *E. Ipecacuanhae.*
Plants stout; stem usually simple below, topped by an umbel. 21. *E. Lathyris.*

† † Leaves mostly opposite; herbage pubescent.

Leaves linear or linear-lanceolate; seeds narrowly-ovoid, not prominently tuberculate. 17. *E. cuphosperma.*
Leaves ovate or ovate-lanceolate; seeds broadly ovoid, prominently tuberculate. 18. *E. dentata.*

† † † Leaves alternate or scattered.

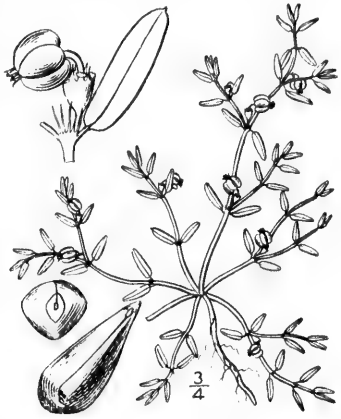
Stem not topped by an umbel. 20. *E. heterophylla.*
Stems topped by a several-rayed umbel.
Leaves serrulate; glands of the involucre oblong, oval or orbicular.
Seeds smooth or faintly reticulated.
Glands stalked; warts on the capsules elongated; seeds faintly reticulated. 23. *E. obtusata.*
Glands sessile; warts on the capsules depressed; seeds smooth. 24. *E. platyphylla.*
Seeds strongly and prominently reticulated.
Glands nearly sessile; capsules warty. 25. *E. dictyosperma.*
Glands stalked; capsules smooth. 26. *E. Helioscopia.*
Leaves entire; glands of the involucres crescent-shaped or reniform.
Plants perennial; seeds smooth.
Glands crescent-shaped, horned.
Stem-leaves 2″–6″ broad; capsules smooth.
Leaves subtending the umbel lanceolate or oblanceolate. 29. *E. Esula.*
Leaves subtending the umbel ovate, oval or obovate. 30. *E. Nicaeensis.*
Stem-leaves ¼″–1½″ broad; capsules granular on the lobes. 31. *E. Cyparissias.*
Glands reniform, not horned. 22. *E. Darlingtonii.*
Plants annual or biennial; seeds pitted or rugose-pitted.
Leaves thin, petioled.
Capsules with 2-crested lobes. 27. *E. Peplus.*
Capsules with rounded lobes. 28. *E. communtata.*
Leaves thick, sessile. 32. *E. robusta.*

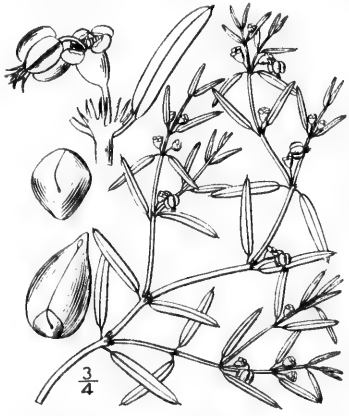
1. Euphorbia polygonifòlia L. Seaside or Knotweed Spurge. (Fig. 2307.)

Euphorbia polygonifolia L. Sp. Pl. 455. 1753.

Annual, pale green, glabrous, stem branched from the base, the branches radiately spreading, prostrate, forked, wiry, 3′–8′ long. Leaves opposite, oblong, linear-oblong or linear-lanceolate, 3″–10″ long, fleshy, obtuse, often mucronulate, entire, obtuse or subcordate and somewhat oblique at the base, short-petioled; stipules an inconspicuous fringe of short bristles; involucres usually solitary in the axils, turbinate-campanulate, less than 1″ long, with 4 columnar nearly naked glands shorter than the lobes; peduncles twice as long as the involucres; capsule globose-ovoid, 1½″–2″ long, nodding, minutely wrinkled; seeds ovoid, 1½″ long, somewhat flattened, ash-colored, very minutely pitted and spotted.

In sand along the Atlantic coast, Rhode Island to Florida, and on the shores of the Great Lakes. July–Sept.





2. Euphorbia petaloidea Engelm. White-flowered Spurge. (Fig. 2308.)

Euphorbia petaloidea Engelm. Bot. Mex. Bound. Surv. 185. 1859.

Annual, pale green, glabrous. Stem usually rather stout, erect, branched above, 6′–2° high; leaves opposite, linear, oblong or linear-lanceolate, 5″–1′ long, obtuse, usually flat, straight, entire, slender-petioled; stipules a fringe of setae; involucres solitary in the axils, oblong-campanulate, 1″ long, bearing 4 wineglass-shaped glands about as long as the lobes, each subtended by a white ovate or orbicular entire or undulate appendage; peduncles as long as the involucres; capsule globose-reniform, 1″ long, seeds oblong-ovoid, nearly 1″ long, ash-colored, minutely pitted, nearly terete.

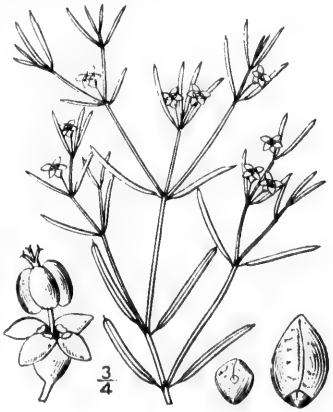
Iowa to Wyoming and Texas. July–Sept.

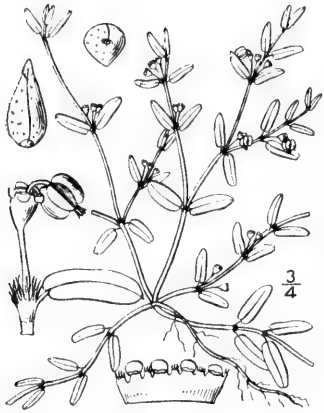
3. Euphorbia Nuttàllii (Engelm.) Small. Prairie Spurge. (Fig. 2309.)

Euphorbia petaloidea var. *Nuttallii* Engelm. Bot. Mex. Bound. Surv. 185. 1859.
E. zygophylloides Boiss. Cent. Euph. 10. 1860.
Euphorbia arenaria Engelm. & Gray, Bost. Journ. Nat. Hist. 5: 260. 1847. Not Nutt. 1837.

Annual, bright green, glabrous. Stem slender, erect or ascending, branched, 4′–2° high, the branches wiry, leaves mostly linear and mucronulate or truncate at the apex, often involute, obtuse or narrowed at the base, petioled, usually curved, the midvein prominent; stipules lanceolate or subulate-lanceolate; involucres solitary in the axils, campanulate, less than 1″ long, long-peduncled, bearing 4 saucer-shaped glands subtended by white entire oblong or ovate appendages; seeds ovoid, ¾″ long, gray, 4-angled.

Prairies, Kansas to Texas and Mexico. June–Sept.





4. Euphorbia Geyèri Engelm. & Gray. Geyer's Spurge. (Fig. 2310.)

Euphorbia Geyeri Engelm. & Gray, Bost. Journ. Nat. Hist. 5: 260. 1847.

Annual, olive-green, glabrous. Stem branched from the base, the prostrate branches radiately spreading, wiry, 2′–15′ long; leaves oblong or ovate, 2″–6″ long, obtuse, usually mucronulate, entire or nearly so, oblique, obtuse or subcordate at the base, short-petioled; stipules a fringe of short setae; involucres usually solitary in the axils, campanulate, about ½″ high, with 4 wineglass-shaped glands shorter than the lobes, each subtended by an inconspicuous white or red entire or lobed appendage; peduncles as long as the involucres, or longer; capsule globose-reniform, about 1″ long, nodding; seeds narrowly ovoid, ¾″ long, ash-colored, nearly terete.

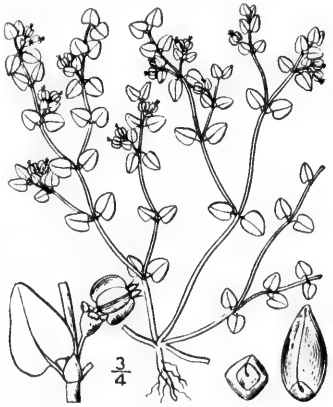
In sandy soil, Minnesota to Illinois and Kansas. July–Sept.

5. Euphorbia sérpens H.B.K. Round-leaved Spreading Spurge. (Fig. 2311.)

Euphorbia serpens H.B.K. Nov. Gen. 2: 52. 1817.

Annual, pale green, glabrous, sometimes glaucescent. Stem branched from the base, the slender or filiform branches prostrate, 2′–12′ long; leaves orbicular, orbicular-ovate or oval, 1″–3″ long, obtuse or emarginate, entire, often slightly revolute-margined, short-petioled, the base oblique, rounded or subcordate; stipules triangular, somewhat incised at the apex; peduncles slightly longer than the petioles; involucres solitary in the axils, nearly ½″ high, bearing 4 sessile saucer-shaped glands shorter than the lobes, each subtended by a minute irregular crenulate appendage; capsule nodding, depressed-globose, 1″ in diameter; seeds oblong-ovoid, ½″ long, smooth, obtusely 4-angled, light gray.

Illinois to Iowa and Kansas, south to Mexico. March–Oct.



6. Euphorbia serpyllifòlia Pers. Thyme-leaved Spurge. (Fig. 2312.)

Euphorbia serpyllifolia Pers. Syn. 2: 14. 1807.

Annual, dark green, or becoming reddish, glabrous. Stem branched from the base, the slender branches prostrate or ascending, 4′–12′ long; leaves oblong to spatulate, 1½″–6″ long, obtuse or retuse, nearly entire, or serrulate to below the middle, short-petioled, the base oblique, mostly truncate or obtuse; stipules at length a fringe of weak setae; involucres solitary in the axils, sometimes clustered toward the ends of the branchlets, less than 1″ long, bearing 4 disk-like glands each subtended by a narrow lobed appendage; capsule 1″ broad, slightly nodding; seeds ovoid, hardly ⅓″ long, 4-angled, the faces transversely wrinkled and pitted.

In dry soil, Wisconsin to California, south to Mexico. May–Sept.

7. Euphorbia glyptospérma Engelm. Ridge-seeded Spurge. (Fig. 2313.)

Euphorbia glyptosperma Engelm. Bot. Mex. Bound. Surv. 187. 1859.

Annual, pale, green, glabrous. Stem branched toward the base, the branches ascending, spreading or prostrate, 2′–15′ long; leaves oblong, linear-oblong or rarely ovate, 1″–6″ long, more or less falcate, obtuse at the apex, inequilateral, serrulate, very oblique and obtuse or subcordate at the base, short-petioled; stipules becoming a fringe of setae; involucres solitary in the axils, often clustered, campanulate, ½″ long, with 4 dark ribs and 4 saucer-shaped glands, their appendages narrow, crenulate, or slightly lobed; capsule depressed-globose, less than 1″ in diameter, nodding; seeds oblong, ½″ long, ash-colored, strongly transversely wrinkled, not pitted.

In sandy soil, Ontario to British Columbia, south to Connecticut, Texas and Mexico. June–Oct.

8. Euphorbia maculàta L. Milk Purslane. Spotted or Blotched Spurge. (Fig. 2314.)

Euphorbia maculata L. Sp. Pl. 455. 1753.

Annual, dark green, puberulent or pilose. Stem branched from the base, the branches slender, radiately spreading, prostrate, 2′–15′ long, often dark red; leaves usually blotched, oblong or ovate-oblong, 2″–8″ long, obtuse, more or less serrate, short-petioled, the base oblique, subcordate; stipules a fringe of setae; involucres solitary in the axils, entire, ½″ long, with 4 cup-shaped glands, the appendages narrow, white or red, crenulate; peduncles shorter than the involucres; capsule ovoid-globose, about 1″ in diameter, pubescent; seeds ovoid-oblong, obtusely angled, ash-colored, minutely pitted and transversely wrinkled.

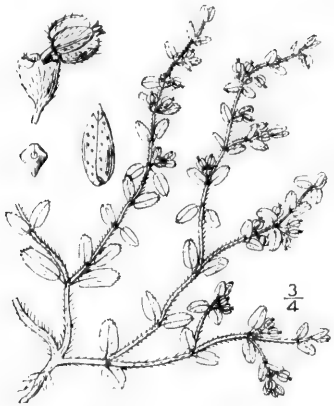
Throughout North America, except the extreme north. Apparently introduced west of the Rocky Mountains. June–Nov.

9. Euphorbia humistràta Engelm. Hairy Spreading Spurge. (Fig. 2315.)

Euphorbia humistrata Engelm.; A. Gray, Man. Ed. 2, 386. 1856.

Annual, light green, puberulent or sparingly pilose. Stem branched from the base, the slender branches radiately spreading, prostrate or ascending, 4′–12′ long; leaves ovate-oblong or obovate-oblong, or sometimes narrower, 2″–7″ long, serrulate, at least above the middle, oblique, obtuse or subcordate at the base, short-petioled; stipules at length fringed; involucres in lateral clusters, split on one side, ½″ long, faintly nerved, with 4 disk-like glands, each subtended by a narrow irregular red or white appendage; capsule depressed-globose, less than 1″ in diameter, its 3 lobes keeled; seeds oblong, ½″ long, papillose, ash-colored, obscurely transversely wrinkled.

Quebec to New York, Kansas and Mississippi. Aug.–Oct.



10. Euphorbia stictóspora Engelm. Narrow-seeded Spurge. (Fig. 2316.)

Euphorbia stictospora Engelm. Bot. Mex. Bound. Surv. 187. 1859.

Annual, yellowish green, pilose throughout. Stem branched from the base, the branches ascending, or radiating, 2′–12′ long; leaves oblong to suborbicular, 2″–3″ long, obtuse, dentate-serrate at the apex, short-petioled, the bases truncate or subcordate; stipules fringed; involucres clustered, campanulate, ½″ high, with 4 cup-shaped glands subtended by inconspicuous crenate appendages; peduncles at length longer than the involucres; capsule ovoid, ½″–1″ in diameter; seeds narrowly ovoid, ½″ long, pointed, pitted, gray or ash-colored, sharply 4-angled.

Kansas and Colorado to Mexico. June–Oct.

11. Euphorbia Féndleri T. & G. Fendler's Spurge. (Fig. 2317.)

Euphorbia Fendleri T. & G. Pac. R. R. Rep. 2: 175. 1855.

Annual (or perennial by a woody root), pale green, glabrous. Stem diffusely branched from the base, the spreading wiry branches 4′–8′ long, brittle; leaves suborbicular, oval or elliptic, 1½″–4″ long, obtuse, entire, short-petioled, the base oblique, obtuse or subcordate; stipules usually a fringe of short setae; involucres solitary in the axils, sometimes clustered toward the ends of the branches, campanulate, 1″–2½″ high, with 4 or 5 saucer-shaped oval glands subtended by irregular entire or slightly lobed appendages; peduncles about as long as the involucres, capsule deflexed, 1½″ in diameter, sharply 3-lobed; seeds ovoid, ¾″ long, transversely wrinkled.

Nebraska and Colorado to Texas, Mexico and Arizona. April–Oct.

12. Euphorbia làta Engelm. Hoary Spurge. (Fig. 2318.)

Euphorbia lata Engelm. Bot. Mex Bound. Surv. 188. 1859.

Perennial, pale green, canescent all over. Stem branched from the somewhat woody base, the branches spreading or ascending, 2′–4′ long; leaves ovate to lanceolate, 2½″–5″ long, revolute-margined, abruptly narrowed, truncate or cordate at the base, short-petioled; stipules obsolete, or of a few short setae; involucres solitary in the axils, ½″ long, short-peduncled, bearing 5 disk-like glands subtended by narrow undulate appendages; capsule subglobose, 1″ in diameter; seeds oblong, ¾″ long, acutish at both ends, 4-angled, the faces inconspicuously transversely wrinkled.

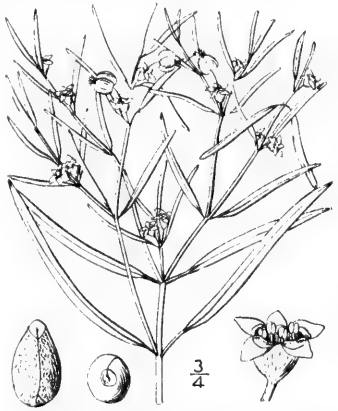
Kansas to Texas and New Mexico.

13. Euphorbia nùtans Lag. Large or Upright Spotted Spurge. (Fig. 2319.)

Euphorbia nutans Lag. Gen. & St. 17. 1816.
Euphorbia Preslii Guss. Fl. Sic. Prodr. 1: 539. 1827.
Euphorbia hypericifolia A. Gray, Man. 407. 1848. Not L. 1753.

Annual, glabrous or sparingly pubescent. Stem branched, at least above, ascending or erect, 7′–2° high, the branches mostly spreading, often recurved at the ends; leaves opposite, oblong, or linear-oblong, varying to ovate or obovate, often falcate, oblique, 3-nerved, unequally serrate, often with a red blotch and red margins, short-petioled; stipules triangular, slightly lacerate; involucres narrowly obovoid, ½″ long, one-half or one-third as long as the peduncles, bearing 4 glands subtended by orbicular or reniform entire white or red appendages; capsule glabrous, 1″ in diameter; seeds oblong-ovoid, ¾″ long, 4-angled, with broken transverse ridges.

In fields and thickets, throughout eastern North America, except the extreme north, extending west to the Rocky Mountains. May–Oct.



14. Euphorbia hexagòna Nutt. Angled Spurge. (Fig. 2320.)

Euphorbia hexagona Nutt.; Spreng. Syst. 3: 791. 1826.

Annual, yellowish green, glabrous or sparingly pubescent. Stem slender, erect, or assurgent, 4′–20′ tall, branched, the branches ascending, often almost filiform; leaves opposite, linear, oblong or lanceolate, very short-petioled, obtuse or acute, equilateral; stipules obsolete or very narrow; involucres solitary in the axils, often clustered, 1‴–1½‴ long, ciliate, pubescent, short-peduncled, with 5 glands subtended by triangular-ovate whitish or green appendages; capsule glabrous, 2‴ in diameter, seeds ovoid or oblong-ovoid, 1½‴ long, terete, papillose.

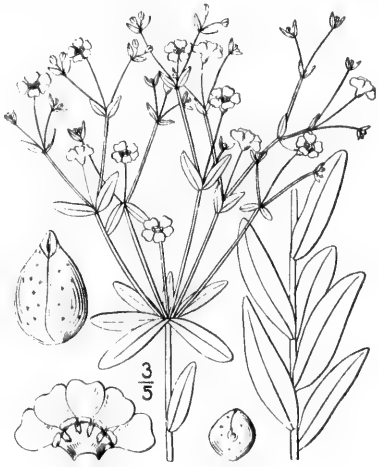
Iowa to Montana, Texas and Colorado. Stem striate-angled. June–Oct.

15. Euphorbia corollàta L. Blooming or Flowering Spurge. (Fig. 2321.)

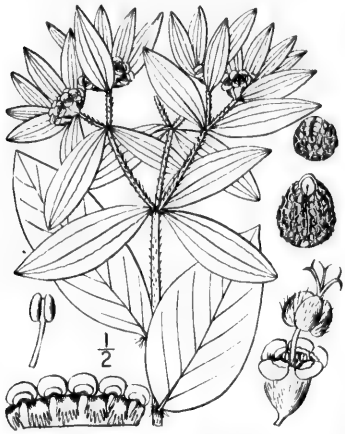
Euphorbia corollata L. Sp. Pl. 459. 1753.

Perennial by a long stout rootstock, bright green, glabrous or somewhat pubescent. Stem erect, 10′–3° tall, often spotted, usually simple; umbellately branched above; leaves linear, oblong or oblong-spatulate, 10″–20″ long, entire, short-petioled or sessile, the lower scattered, those subtending the umbel verticillate, rays of the umbel forked; bracts ovate to linear, green; involucres mostly terminal, less than 1″ long, bearing 4 or 5 yellowish green oblong glands subtended by white petal-like cuneate or orbicular-cuneate appendages; capsule erect, subglobose, 1″–2″ in diameter; seeds ovoid, smooth, sparingly pitted.

In dry soil, Ontario to Minnesota and Kansas, south to Florida and Texas. April–Oct. Ascends to 4200 ft. in North Carolina.



16. Euphorbia marginàta Pursh. White-margined Spurge. (Fig. 2322.)



Euphorbia marginata Pursh, Fl. Am. Sept. 607. 1814.

Annual, bright green, glabrous or pubescent. Stem rather stout, erect, 10′–3° tall, somewhat channelled, usually pilose, topped by a mostly 3-rayed umbel; leaves except the whorl subtending the umbel, scattered, ovate to obovate, 10″–3½′ long, entire, sessile, rays of the umbel forked; bracts large, white-margined; involucres campanulate, often clustered, 2″ long, usually pubescent, bearing 3 glands subtended by white reniform appendages; capsule depressed-globose, 3″ in diameter, usually pubescent, the lobes rounded; seeds ovoid-globose, terete, about 2″ long, dark ash-colored, reticulate-tuberculate.

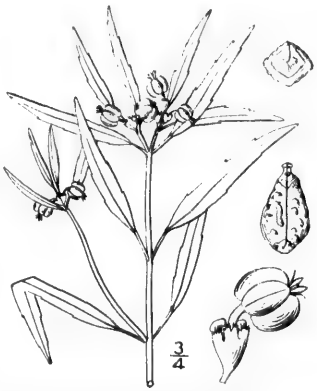
In dry soil, Minnesota to Colorado, south to Texas. Introduced into waste places in the Central and Atlantic States. May–Oct.

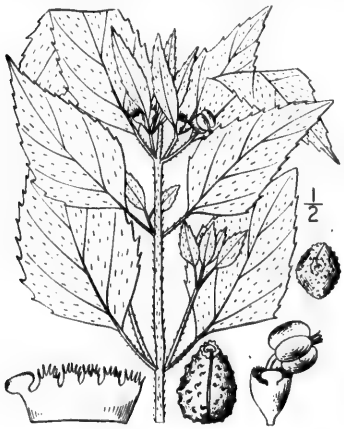
17. Euphorbia cuphospérma (Engelm.) Boiss. Warty Spurge. (Fig. 2323.)

Euphorbia dentata var. *cuphosperma* Engelm. Bot. Mex. Bound. Surv. 190. 1859.
Euphorbia cuphosperma Boiss. in DC. Prodr. 15: Part 2, 73. 1862.

Annual, usually sparingly pubescent. Stem erect, slender, simple, or sparingly branched, 8′–15′ high. Leaves opposite or alternate, linear, oblong, or linear-lanceolate, 10″–3′ long, entire, undulate, or denticulate, narrowed into a slender petiole; involucres crowded at the ends of the branches, nearly sessile, glabrous, or nearly so, nearly 2″ long, bearing about 4 long-stalked unappendaged glands; capsule glabrous, or sparingly pubescent, 2½″ in diameter, seeds narrowly ovoid, about 1½″ long, irregularly 4-angled, ridged and slightly tuberculate.

South Dakota to Colorado and Mexico. Aug.–Sept.





18. Euphorbia dentàta Michx. Toothed Spurge. (Fig. 2324.)

Euphorbia dentata Michx. Fl. Bor. Am. 2: 211. 1803.

Annual, dull green, pubescent. Stem erect or ascending, 8′–15′ high, somewhat woody below, branched, the branches mostly ascending; leaves opposite, or the lowest alternate, varying from ovate to nearly linear or orbicular-oblong, 5″–3½′ long, coarsely dentate, narrowed into slender petioles, the nerves prominent beneath; involucres clustered at the ends of the branches, oblong-campanulate, about 1½″ long, 3–5-lobed, bearing 1–4 yellowish short-stalked glands without appendages; capsule glabrous, 2″–2½″ in diameter; seeds ovoid or ovoid-globose, ash-colored, irregularly tuberculate, inconspicuously 4-angled.

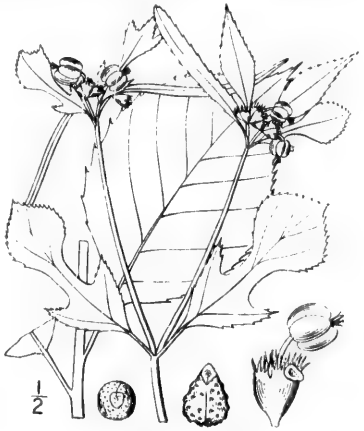
In dry or moist soil, Pennsylvania to South Dakota, Louisiana and Mexico. July–Oct.

19. Euphorbia Ipecacuánhae L. Wild Ipecac. Ipecac Spurge. (Fig. 2325.)

Euphorbia Ipecacuanhae L. Sp. Pl. 455. 1753.

Perennial by a deep perpendicular root, glabrous or pubescent. Stems several or many, slender, spreading, ascending or nearly erect, 4′–10′ long, branched; leaves green or red, wonderfully variable in outline from linear to orbicular, 5″–3′ long, mostly opposite, entire, the upper sometimes whorled, the lower often alternate, short-petioled; involucres axillary, mostly hemispheric, nearly 1″ long, slender-peduncled; bearing 5 transversely elliptic or oblong green sessile unappendaged glands; capsule 1½″ in diameter, nodding; seeds light gray, oblong-ovoid or ovoid, 1½″ long, pitted, obscurely 4-sided.

In dry sandy soil, Connecticut to Florida, mostly near the coast. Also in southern Indiana. An emetic. May–Oct.

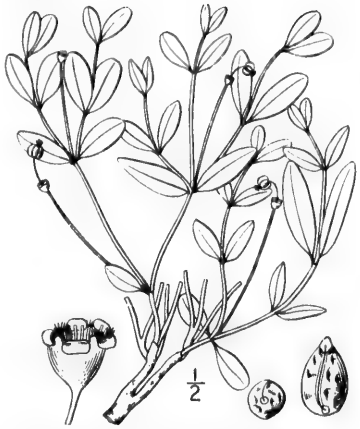


21. Euphorbia Láthyris L. Caper or Myrtle Spurge. (Fig. 2327.)

Euphorbia Lathyris L. Sp. Pl. 457. 1753.

Annual or biennial, glabrous, stout, glaucous. Stem usually erect, stout, 8′–3° tall, mostly simple below, umbellately branched above; leaves numerous, the lower scattered, those subtending the umbel verticillate, the lower linear, reflexed, the upper lanceolate or linear-lanceolate, 1½′–5′ long, entire, sessile, subcordate at the base; bracts opposite, ovate or ovate-lanceolate, truncate or subcordate; involucres 2½″ long, bearing 4 crescent-shaped unappendaged glands prolonged into short horns; capsule subglobose, 5″–6″ in diameter, its lobes rounded; seeds oblong-ovoid, 2½″–3″ long, terete, usually wrinkled.

In waste places, New Jersey to North Carolina. Also in California. Native of Europe. Called also Wild Caper, Caper-bush, Mole-tree or Mole-plant and Spring-wort, its seeds a cathartic. May–Aug.



20. Euphorbia heterophýlla L. Various-leaved Spurge. (Fig. 2326.)

Euphorbia heterophylla L. Sp. Pl. 453. 1753.

Annual or biennial, bright green, pubescent or nearly glabrous. Stem mostly erect, 1°–3° tall, woody below, with the branches ascending, or the lower spreading, leafy at the ends; leaves alternate, very variable, linear to orbicular, entire, undulate, sinuate or dentate, the uppermost often fiddle-shaped and blotched with red; all slender-petioled; involucres clustered at the ends of branches, 1½″ long, about equalling the peduncles; cleft into 5 ovate or oblong laciniate lobes, the sinuses bearing 1 or several sessile glands without appendages; capsule glabrous or minutely pubescent, 3″ in diameter; seeds oblong-ovoid, 1½″ long, transversely wrinkled and tuberculate.

Illinois to Montana, Florida and Central America. Widely distributed in tropical America. April–Nov.

22. Euphorbia Darlingtònii A. Gray. Darlington's Spurge. (Fig. 2328.)

Euphorbia Darlingtonii A. Gray, Man. 404. 1848.

Perennial, dark green, often minutely pubescent. Stem rather stout, erect, 1½°–5° tall, fleshy, topped by a 5–8-rayed umbel, branched above, the branches simple or forked; the leaves oblong or oblanceolate, 1½′–4′ long, mostly obtuse at the apex, sessile, often undulate, more or less pubescent beneath, those of the stem scattered, those subtending the umbels verticillate; bracts opposite, ovate or nearly reniform; involucres campanulate, nearly 2″ long, bearing 5 reniform crenulate unappendaged glands; capsule depressed-globose, minutely warty; seeds ovoid-globose.

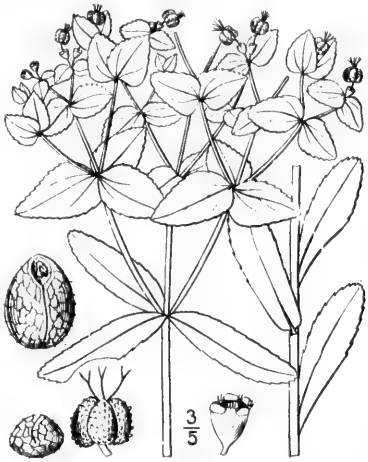
New York, Pennsylvania and New Jersey to North Carolina. May–Sept.

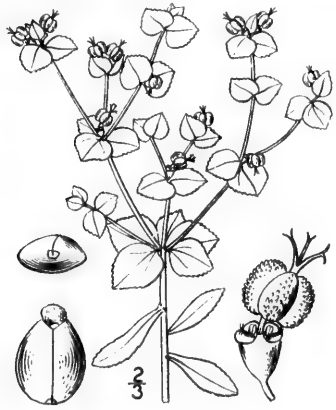
23. Euphorbia obtusàta Pursh. Blunt-leaved Spurge. (Fig. 2329.)

Euphorbia obtusata Pursh, Fl. Am. Sept. 606. 1814.

Annual, yellowish green, glabrous. Stem slender, erect or assurgent, 1°–2° high, strict, branched above, topped by a 3-rayed umbel; branches simple or forked; leaves, except the whorl subtending the umbel, scattered, spatulate-oblong, obtuse, serrulate to below the middle, sessile, the base slightly auricled; involucres short-peduncled, ½″ long, bearing 4 stalked unappendaged glands; capsule subglobose, nearly 2″ in diameter, with elongated warts, the lobes rounded; seeds lenticular, oblong, or orbicular-oblong, dark brown, faintly reticulated.

In dry soil, Virginia to Iowa, South Carolina and Texas. March–July.





24. Euphorbia platyphýlla L. Broad-leaved Spurge. (Fig. 2330.)

Euphorbia platyphylla L. Sp. Pl. 460. 1753.

Annual, glabrous or nearly so. Stems mostly erect, slender, 4′–20′ high, terete, often reddish, topped by a usually 5-rayed umbel; the branches forked or umbellately branched; leaves, except the whorl at base of the umbel, scattered, oblong or spatulate-oblong, 10″–15″ long, acute, serrulate, sessile, the base slightly auricled; bracts triangular-ovate or reniform, mucronate, often entire; involucres very thin, campanulate, nearly 1″ long, sessile, bearing 4 sessile glands without appendages; capsule subglobose, about 2″ in diameter, with depressed warts, the lobes rounded; seeds lenticular, oblong or nearly orbicular, smooth, brown.

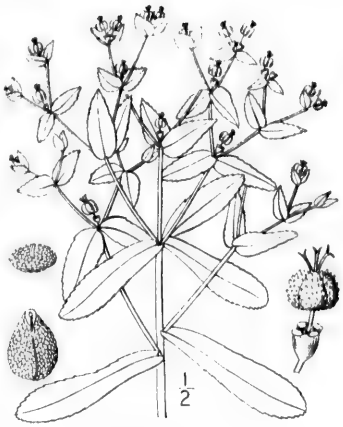
Along the shores of the St. Lawrence River and the Great Lakes. Naturalized from Europe. June–Sept.

25. Euphorbia dictyospérma F. & M. Reticulate-seeded Spurge. (Fig. 2331.)

Euphorbia dictyosperma F. & M. Ind. Sem. Hort. Petrop. 2: 37. 1835.

Annual, olive green, glabrous. Stem erect, rather slender, 4′–15′ high, topped by a compound 3-rayed umbel; branches forked; leaves, except those subtending the umbel, scattered, spatulate or oblong, 5″–1½′ long; obtuse, serrate to below the middle, sessile, the upper slightly auricled at the base; bracts oblong or ovate, inequilateral, small, serrate, cordate; involucres solitary in the axils, less than 1″ long, with 4 oblong naked nearly sessile glands; capsule depressed-globose, 1½″ in diameter, with elongated warts; seeds ovoid, lenticular, reddish brown, finely but distinctly reticulated.

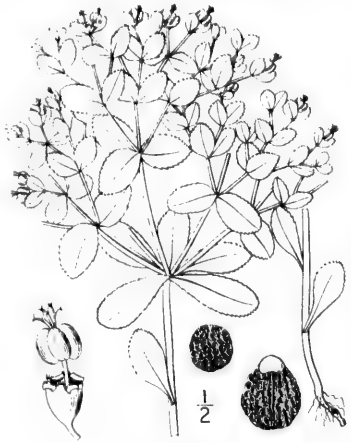
Maryland to Minnesota and California, south to Alabama and Mexico. May–Aug.



26. Euphorbia Helioscòpia L. Sun Spurge. Wartweed. (Fig. 2332.)

Euphorbia Helioscopia L. Sp. Pl. 459. 1753.

Annual, glabrous or nearly so. Stem stout, erect or assurgent, 8′–12′ tall, often branched from the base, topped like the branches by a more or less compound 3–5-rayed umbel; leaves, except the whorl at the base of the umbel, scattered, spatulate, obovate, oblong, or sometimes nearly orbicular, ½′–4½′ long, obtuse or retuse, serrulate, narrowed to a short petiole; bracts oblong or ovate, serrulate, inequilateral, sessile; involucres oblong-campanulate, 1¼″ long, nearly sessile, usually with 4 oblong stalked unappendaged glands; capsule globose-ovoid, or somewhat depressed, 2″ in diameter, smooth, the lobes rounded; seeds ovoid, nearly 1½″ long, reddish brown, strongly reticulate.



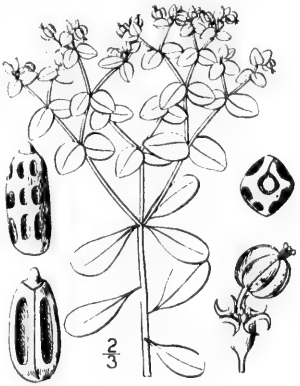
In waste places in the Valley of the St. Lawrence and along the Great Lakes, extending south in New York and Ohio. Naturalized from Europe. Among many other English names are Sunweed, Turnsole, Little Good, Cat's Milk, Wolf's Milk, Churnstaff, Wart-grass, Mouse-milk. June–Oct.

27. Euphorbia Péplus L. Petty Spurge. (Fig. 2333.)

Euphorbia Peplus L. Sp. Pl. 456. 1753.

Annual, glabrous. Stem rather slender, erect or nearly so, 4′–12′ high, simple or branched, topped by a 3–5-rayed umbel; stem-leaves scattered, oblong or obovate, ½′–1¼′ long, obtuse or retuse, entire, crisped, narrowed into a slender petiole; those at the base of the umbel whorled; bracts opposite, ovate or triangular-ovate, apiculate, sessile; involucres campanulate, almost sessile, less than 1″ long, bearing 4 crescent-shaped unappendaged glands prolonged into slender horns; capsule globose-ovoid, 1″–1½″ in diameter, slightly nodding, smooth, the lobes 2-keeled; seeds oblong or oblong-ovoid, whitish, nearly terete, marked with 1–4 series of pits.

In waste places, western New York to New Jersey and Pennsylvania. Adventive from Europe. June–Sept.



28. Euphorbia commutàta Engelm. Tinted Spurge. (Fig. 2334.)

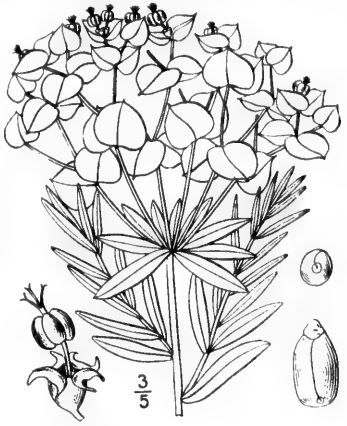
Euphorbia commutata Engelm. in A. Gray, Man. Ed. 2, 389. 1856.

Euphorbia Ohiotica Steud. & Hochst.; Boiss. in DC. Prodr. **15**: Part 2, 142. 1862.

Biennial, yellowish green, often tinged with red, glabrous. Stem slender, usually decumbent at the base, 4′–15′ long, branched, topped by a 3-rayed umbel; branches forked or umbellately branched; leaves, except the whorl at the base of the umbel, scattered, spatulate to ovate, ½′–1½′ long, obtuse or mucronulate, entire, flat, narrowed into a slender petiole; bracts opposite, ovate-reniform; involucres campanulate, 1¼″ long, sessile, bearing 3 or 4 crescent-shaped unappendaged glands prolonged into slender horns; capsule globose-ovoid, 1½″ in diameter, glabrous, the lobes rounded; seeds oblong, terete, irregularly pitted.

On hillsides, chiefly along streams, Pennsylvania to Minnesota, Florida and Missouri. March–July.

29. Euphorbia Ésula L. Leafy Spurge. Faitour's Grass. (Fig. 2335.)

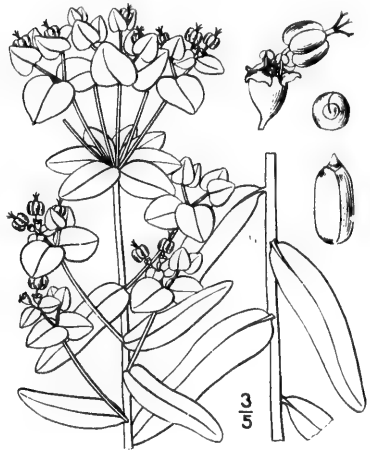


Euphorbia Esula L. Sp. Pl. 461. 1753.

Perennial by a horizontal rootstock, glabrous. Stems often clustered, slender, mostly erect, 8′–2° tall, scaly below, branched above, topped by a many-rayed umbel; leaves few, all scattered, except the whorl at the base of the umbel, linear or oblong, 7″–20″ long, 2″–6″ broad, entire, sessile; those subtending the umbel lanceolate or oblanceolate; bracts subreniform, mucronate; involucres campanulate, 1¼″–1½″ long, nearly sessile, bearing 4 unappendaged crescent-shaped glands; capsule nodding, smooth; seeds oblong, terete, smooth.

In waste places, Massachusetts to New York and Michigan. Also called Tithymal. Naturalized from Europe. Summer.

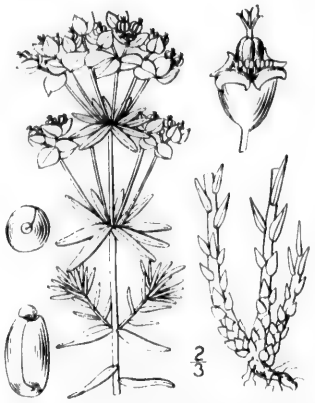
30. Euphorbia Nicaeénsis All. Nicaean Spurge. (Fig. 2336.)



Euphorbia Nicaeensis All. Fl. Ped. **1**: 285. *pl. 69. f. 1.* 1785.

Perennial by a horizontal rootstock, bright green, glabrous. Stem rather stout, usually clustered, erect or assurgent, 8′–20′ high, usually very leafy, simple or branched, topped by a 4–7-rayed umbel; branches simple or forked; leaves, except the whorl at the base of the umbel, alternate, linear or linear-oblong, ½′–1½′ long, 2″–6″ broad, entire, mostly apiculate, sessile, revolute-margined, those subtending the umbel ovate, oval or obovate; bracts opposite, reniform, obtuse or apiculate; involucres campanulate, 1½″ long, sessile, bearing 4 yellowish oblong crescent-shaped, 2-horned, unappendaged glands; capsule globose-ovoid, 2″ in diameter, nodding, smooth, finely wrinkled; seeds oblong, 1¼‴–1½″ long, nearly terete, whitish, smooth.

In fields along the Susquehanna River, southern New York and northern Pennsylvania. Naturalized from Europe. July–Sept.



31. Euphorbia Cyparissias L. Cypress Spurge. (Fig. 2337.)

Euphorbia Cyparissias L. Sp. Pl. 461. 1753.

Perennial by horizontal rootstocks, bright green, glabrous. Stems mostly clustered, often growing in large patches, scaly below, leafy above, erect, 1° high, or less, branched, the branches topped by many-rayed umbels; leaves linear, or almost filiform, those subtending the umbels whorled, the others alternate, sessile, 6″–1′ long, ¼″–1½″ broad; involucres turbinate-campanulate, 1″ long, short-peduncled, with 4 unappendaged crescent-shaped glands; capsule subglobose, 1½″ in diameter, spreading, granular on the rounded lobes; seeds oblong, 1″ long, smooth.

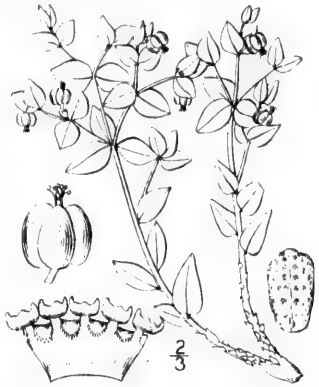
Escaped from gardens to roadsides and waste places in the Atlantic States. Naturalized from Europe. Called also Quack Salver's Spurge. Poisonous when eaten in quantities. Bracts yellowish at flowering time. Lower leaves often mere scales. May–Sept.

32. Euphorbia robústa (Engelm.) Small. Rocky Mountain Spurge. (Fig. 2338.)

Euphorbia montana β *robusta* Engelm. Bot. Mex. Bound. Surv. 192. 1859.

Perennial by a perpendicular rootstock, glabrous, glaucous. Stems slender, clustered, erect or assurgent, 4′–14′ tall, slightly angled, scaly below, branched, topped by a 3–5-rayed umbel; leaves, except the whorl subtending the umbel, scattered, ovate or oblong-ovate, 5″–8″ long, thick, obtuse or apiculate, entire, sessile; bracts opposite, triangular-ovate or subreniform, involucres campanulate, 1½″ long, sessile, bearing 4 somewhat crescent-shaped unappendaged buff crenulate glands; capsule globose-ovoid, 2″ long, horizontal, its lobes rounded; seeds oblong or obovoid-oblong, terete, 1¼″ long, gray, minutely pitted.

Montana and Wyoming to Nebraska and Arkansas. May–Oct.



Family 58. **CALLITRICHÀCEAE** Lindl. Nat. Syst. Ed. 2, 191. 1836.*

WATER STARWORT FAMILY.

Herbaceous aquatic or rarely terrestrial plants, with slender or capillary stems, opposite exstipulate entire spatulate or linear leaves, and minute perfect or monoecious axillary flowers. Perianth none. Bracts 2, sac-like or none. Stamen 1; filament elongated, filiform; anthers cordate, 2-celled, opening by lateral slits. Pistil 1; ovary 4-celled; ovules 1 in each cavity; styles 2, filiform, papillose nearly the whole length. Fruit compressed, lobed, the lobes more or less winged or keeled on the margins, separating at maturity into 4 flattish 1-seeded carpels. Seed anatropous, pendulous; endosperm fleshy; embryo straight or slightly curved, nearly as long as the endosperm.

Consists of the following genus:

1. CALLÍTRICHE L. Sp. Pl. 969. 1753.

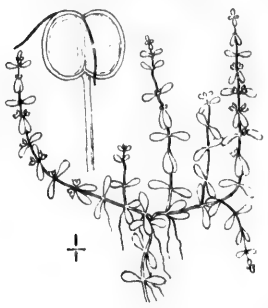
Characters of the family. The affinities are variously regarded by botanical authors, some placing it in HALORAGEAE, some in ONAGRACEAE, others near EUPHORBIACEAE, the position here maintained. [Greek, beautiful hair, from the hair-like stems.]

About 20 species, of very wide geographic distribution. Besides the following, about 7 others occur in the southern and western parts of North America. Known as Water Starwort or Star-grass.

Fruit short-peduncled; bracts wanting; terrestrial. 1. *C. Austini.*
Fruit sessile; aquatic, or some forms growing in mud.
  Bracts present.
    Fruit oval, flat on the face, longer than the styles. 2. *C. palustris.*
    Fruit obovate, plano-convex, shorter than the styles. 3. *C. heterophylla.*
  Bracts none; leaves all linear, submersed. 4. *C. bifida.*

*Text contributed by the late Rev. THOMAS MORONG.

1. Callitriche Aùstini Engelm. Terrestrial Water-Starwort. (Fig. 2339.)



Callitriche terrestre Raf. Med. Rep. (II.) **5**: 358. 1808?
Callitriche deflexa var. *Austini* Hegelm. Ver. Bot. Ver. Brand. **9**: 15. 1867.
C. Austini Engelm. in A. Gray. Man. Ed. 5, 428. 1867.

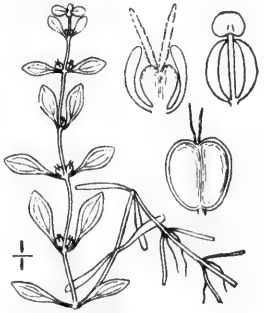
Tufted, the branches spreading on the ground or ascending, ½′–2′ long. Leaves spatulate or obovate, 3-nerved, 1½″–2″ long, about 1″ wide, obtuse, tapering at the base into a short margined petiole, destitute of stellate scales; fruit about ¼″ long and nearly ½″ broad, deeply notched at both ends, its lobes with a narrow marginal wing or raised border, with a deep groove between them; peduncle shorter than or slightly exceeding the fruit; styles persistent, not longer than the fruit, spreading or reflexed.

In damp, shaded places, southern New York and northern New Jersey to Ohio and Missouri, south to Tennessee, Louisiana, Texas, and Mexico. July-Sept. The dried plant exhales a pleasant odor like Melilot.

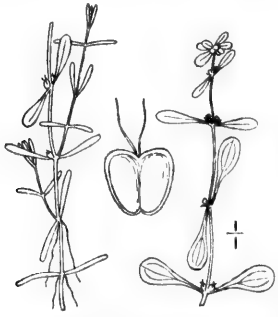
2. Callitriche palústris L. Vernal Water-Starwort. Water Fennel. (Fig. 2340.)

Callitriche palustris L. Sp. Pl. 969. 1753.
Callitriche verna L. Fl. Suec. Ed. 2, 4. 1755.
Callitriche vernalis Koch, Syn. Fl. Germ. Ed. 2, 245. 1837.

Aquatic or growing in the mud, stems 2′–10′ long. Submerged leaves linear, 1-nerved, retuse or bifid at the apex, 5″–10″ long; emersed or floating leaves obovate, obtuse, truncate or retuse at the apex, narrowed at the base into a margined petiole, dotted with stellate scales; aquatic forms occur with the leaves all linear; fruit 2-bracted, oval, ½″–1″ long, about one-half as broad, nearly flat on the face, slightly notched at the apex, winged only toward the apex, or all around, separated by a deep groove.



Mostly in cold or running water, apparently occurring nearly throughout the United States and Canada. Also in South America, Europe and Asia. July-Sept.



3. Callitriche heterophýlla Pursh. Larger Water-Starwort. (Fig. 2341.)

Callitriche heterophylla Pursh, Fl. Am. Sept. 3. 1814.

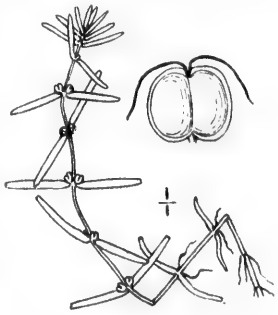
Similar to the preceding species, either aquatic or growing in the mud. Fruit smaller, mostly obovate, usually slightly less than ½″ long, and about the same breadth, broadly notched at the apex, thick, plano-convex, almost ventricose at the base; lobes obtusely angled with a small intervening groove, wingless, or with a narrow wing or raised border on the margins; styles usually longer than the fruit, erect.

In ponds and slow streams, New England to Florida, west to the Northwest Territory, Missouri and Louisiana; of more southerly distribution than the last. Also in Colorado. July-Sept.

4. Callitriche bífida (L.) Morong. Autumnal or Northern Water-Starwort. (Fig. 2342.)

Callitriche palustris var. *bifida* L. Sp. Pl. 969. 1753.
Callitriche autumnalis L. Fl. Suec. Ed. 2, 4. 1755.
Callitriche bifida Morong, Mem. Torr. Club, **5**: 215. 1894.

Entirely submerged. Leaves crowded, linear or linear-lanceolate, clasping at the base, retuse or bifid at the apex, 1-nerved, 5″–8″ long, without stellate scales; fruit sessile, or rarely minutely pedunculate, orbicular or slightly narrower than long, ½″–1″ in diameter, its lobes separated by a deep groove and broadly winged on the margins; styles as long as the fruit, or shorter, soon deciduous; bracts none.



In flowing water, Quebec and Lake Champlain to Michigan, Manitoba and Oregon, south in the Rocky Mountains to Colorado. Also in Europe and Asia. July-Sept.

Family 59. **EMPETRÀCEAE** Dumort. Fl. Belg. 106. 1827.

CROWBERRY FAMILY.

Low evergreen shrubs, with small narrow nearly sessile exstipulate leaves jointed to short pulvini, channeled on the lower side by the revolute margins, and small dioecious or rarely polygamous flowers, axillary or in terminal heads. Calyx of 3 sepals. Corolla of 2 or 3 petals, or none. Staminate flowers with 2–4 (mostly 3) stamens, the filaments filiform, the anthers 2-celled, longitudinally dehiscent, sometimes with a rudimentary pistil. Pistillate flowers with a 2–several-celled sessile ovary, the single style cleft into as many stigma-bearing segments as there are ovary-cavities; ovules 1 in each cavity, amphitropous. Fruit a berry-like drupe, containing 2–several 1-seeded nutlets. Embryo straight, terete, in copious endosperm.

Three known genera, the following, and the monotypic *Corrigiola* of the southeastern United States.

Flowers axillary; petals 3. 1. *Empetrum.*
Flowers in terminal heads; petals none. 2. *Corema.*

1. ÉMPETRUM L. Sp. Pl. 1022. 1753.

Depressed or spreading herbaceous shrubs, freely branching, dioecious or monoecious, the branches usually densely leafy, the leaves linear-oblong. Flowers inconspicuous, solitary in the upper axils. Sepals and petals mostly 3. Staminate flowers with 3 stamens, the anthers introrse. Pistillate flowers with a globose 6–9-celled ovary, and a short thick style with 6–9-toothed segments. Drupe black, or red, containing 6–9 nutlets. [Greek, on rocks, referring to the growth of these plants in rocky places.]

Two known species, the following, and *C. rubrum* of southern South America.

1. Empetrum nigrum L. Black Crowberry. Heathberry. (Fig. 2343.)

Empetrum nigrum L. Sp. Pl. 1022. 1753.

Glabrous, or the young shoots pubescent, usually much branched, the branches diffusely spreading, 2′–10′ long. Leaves crowded, dark green, linear-oblong, thick, obtuse, 2″–3½″ long, about ½″ wide, the strongly revolute margins roughish; flowers very small, purplish; stamens exserted; drupe black (red in an arctic form), 2″–3″ in diameter.

In rocky places, Greenland to Alaska, south to the coast of Maine, the higher mountains of New England and northern New York, Michigan and California. Also in Europe and Asia. Called also Crakeberry, Blackberried Heath, Wire Ling, Crowpea and Monox Heather. Grows in dense beds; the fruit much eaten by arctic birds. Summer.

2. CORÈMA Don, Edinb. New Phil. Journ. 15: 63. 1826–27.

[OAKESIA Tuckerm. in Hook. Lond. Journ. Bot. 1: 445. 1842.]

Low, much branched shrubs, with narrowly linear leaves crowded on the branches, and small dioecious or polygamous flowers in terminal heads. Corolla none. Staminate flowers with 3 or sometimes 4 long-exserted stamens, occasionally with a rudimentary or perfect pistil. Pistillate flowers with a 2–5-celled (mostly 3-celled) ovary and a slender 2–5-cleft style, the stigmatic branches very slender, sometimes toothed. Drupe globose, usually with 3 nutlets. [Greek, a broom, in allusion to the bushy habit.]

Two species, the following of the eastern United States, the other of southwestern Europe, the Azores and Canaries.

1. Corema Conràdii Torr. Conrad's Broom Crowberry. (Fig. 2344.)

Empetrum Conradii Torr. Ann. Lyc. N. Y. 4: 83. 1837.
Corema Conradii Torr.; Loudon, Encycl. Trees, 1092. 1842.

Much branched, 6′–2° high, the young twigs puberulent and densely leafy, the branches minutely scarred by the persistent pulvini. Leaves 2″–3″ long, rather less than ½″ wide, obtuse, glabrous when mature, bright green; flowers numerous in the terminal sessile heads, the pistillate ones almost concealed by the upper leaves, the staminate conspicuous by the exserted purple stamens; drupes nearly dry, less than 1″ in diameter.

In rocky or sandy soil, Newfoundland to New Jersey, mostly near the coast, but occurring in one station on the Shawangunk Mountains in Ulster Co., N. Y. Local. Usually growing in large patches. April–May.

Family 60. **BUXÀCEAE** Dumort. Comm. Bot. 54. 1822.

Box Family.

Monoecious or dioecious trees, shrubs or perennial herbs, with alternate or opposite simple mostly evergreen leaves, the sap not milky. Flowers clustered or solitary, regular, bracted, with or without a perianth (calyx). Petals none. Staminate flowers with 4–7 distinct stamens, the anthers 2-celled; sometimes with a rudimentary pistil. Pistillate flowers with a 2–4-celled (mostly 3-celled) ovary, with 2 or 1 anatropous ovules in each cavity; styles as many as the ovary-cavities, simple. Fruit a capsule or drupe, its carpels 1–2-seeded. Embryo straight; endosperm fleshy, or almost wanting.

About 6 genera and 30 species, only the following and the Californian *Simmondsia* in North America.

1. **PACHYSÁNDRA** Michx. Fl. Bor. Am. 2: 177. 1803.

Monoecious perennial herbs, with matted rootstocks, the stems procumbent or ascending, leafy above, scaly or naked below. Leaves alternate, exstipulate, petioled, persistent, broad, 3-nerved, coarsely toothed, or entire. Flowers spicate, the pistillate and staminate in the same spike. Staminate flowers with 4 sepals; stamens 4, opposite the sepals; filaments thick, long-exserted; anthers 2-celled, the sacs longitudinally dehiscent. Pistillate flowers with 4 sepals or more; ovary 3-celled, the cavities with a partition at the base; styles 3, spreading; ovules 2 in each cavity. Capsule of 3 2-seeded carpels. [Greek, thick stamen.]

Two species, the following of southeastern North America, the other Japanese.

1. Pachysandra procúmbens Michx. Alleghany Mountain Spurge. (Fig. 2345.)

Pachysandra procumbens Michx. Fl. Bor. Am. 2: 177. *pl. 45* 1803.

Somewhat pubescent; stems stout, simple, 1° long or less. Leaves ovate, oval, or obovate, 2′–4′ long, obtuse or acutish at the apex, coarsely dentate or some of them entire, cuneate or abruptly narrowed at the base into a petiole shorter than or equalling the blade; spikes 1 or several in the axils of the lower scales, densely many-flowered, 2′–3′ long, the staminate flowers forming most of the spike, the pistillate few toward its base; sepals green or purplish; filaments white, 4″–5″ long.

In woods, West Virginia to Florida and Louisiana. Flowers fragrant. April–May.

Family 61. **LIMNANTHÀCEAE** Lindl. Nat. Syst. Ed. 2, 142. 1836.

FALSE MERMAID FAMILY.

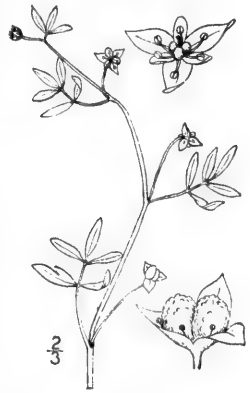
Annual herbs, with alternate petioled exstipulate pinnately divided leaves. Flowers perfect, regular, white pink or red, axillary, long-peduncled. Sepals 2–5, valvate, persistent. Petals the same number as the sepals, alternating with as many small glands, the nearly perigynous stamens twice as many, distinct. Filaments filiform; anthers 2-celled, the sacs longitudinally dehiscent. Carpels as many as the sepals and opposite them, 1-ovuled, nearly distinct, the single slender style arising from the centre as in Geraniaceae, cleft above into as many stigmas as there are carpels; ovule ascending. Fruit very deeply 2-5-lobed, the carpels indehiscent, rough or tubercled. Embryo straight; endosperm none; cotyledons thick.

Two North American genera, the following, and *Limnanthes*, of the Pacific States, with 5 or 6 species.

1. **FLOÉRKEA** Willd. Neue Schrift. Ges. Nat. Fr. 3: 448. 1801.

An annual diffuse glabrous herb, with small white solitary flowers. Sepals 2–3, valvate. Glands 2–3. Petals 2–3, oblong, entire. Stamens 4–6. Ovary 2–3-lobed nearly to the base, 2–3-celled; stigmas 2–3. Mature carpels 1–3, rugose, indehiscent, fleshy. Seed erect. [In honor of H. G. Floerke, 1790–1835, a German botanist.]

A monotypic genus of northern North America.



1. **Floerkea proserpinacoìdes** Willd. False Mermaid. (Fig. 2346.)

Floerkea proserpinacoides Willd. Neue Schrift. Ges. Nat. Fr. 3: 448. 1801.

Slender, weak, 4′–15′ long, branching. Leaves thin, slender-petioled, ½′–3′ long, the segments 5 or 3, distant, lanceolate, oblong or linear-oblong, acute or obtusish, entire or cleft; peduncles slender, elongating in fruit; flowers white, about 1½″ broad; sepals ovate, acute, at length much exceeding the fruit; stamens about equalling the petals; ripe carpels nearly globular, about 1½″ in diameter, tuberculate above.

In marshes and along rivers, Quebec to Ontario and Oregon, south to Pennsylvania, Ohio, Missouri, Utah, and California. April–June.

Family 62. **ANACARDIÀCEAE** Lindl. Nat. Syst. 1830.

SUMAC FAMILY.

Trees or shrubs, with acrid resinous or milky sap, alternate or rarely opposite leaves, and polygamo-dioecious or perfect, mainly regular flowers. Calyx 3–7-cleft. Petals of the same number, imbricated in the bud, or rarely none. Disk generally annular. Stamens as many or twice as many as the petals, rarely fewer, or more, inserted at the base of the disk; filaments separate; anthers commonly versatile. Ovary in the staminate flowers 1-celled. Ovary in the pistillate flowers 1- or sometimes 4–5-celled; styles 1–3; ovules 1 in each cavity. Fruit generally a small drupe. Seed-coat bony or crustaceous; endosperm little or none; cotyledons fleshy.

About 50 genera and 400 species, most abundant in warm or tropical regions, a few extending into the temperate zones.

Styles terminal; leaves compound in our species; fruit nearly symmetrical. 1. *Rhus.*
Styles lateral; leaves simple; fruit gibbous. 2. *Cotinus.*

1. **RHÚS** L. Sp. Pl. 265. 1753.

[TOXICODENDRON Mill. Gard. Dict. Ed. 7. 1759.]

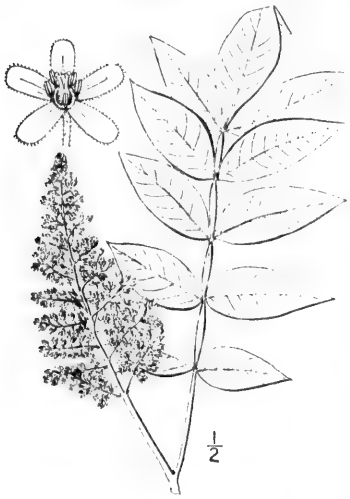
Shrubs or trees, with alternate simple 3-foliolate or odd-pinnate leaves, no stipules, and small polygamous flowers in axillary or terminal panicles. Calyx 4–6-cleft or parted (commonly 5-cleft), persistent. Petals equal, imbricated, spreading. Disk annular. Stamens (in our species) 5. Pistil 1, sessile; ovary 1-ovuled; styles 3, terminal. Drupe small, 1-seeded, mostly subglobose, pubescent or glabrous. Seed inverted on a stalk that rises from the base of the ovary; cotyledons nearly flat. [Ancient Greek and Latin name; Celtic, red.]

About 120 species, natives of warm and temperate regions, most abundant in South Africa. Besides the following, about 8 others occur in the southern and western parts of the United States.

Fruit pubescent; stone smooth.
- Leaflets 9–31.
  - Rachis of the leaf wing-margined. — 1. *R. copallina.*
  - Rachis of the leaf nearly terete.
    - Foliage and twigs velvety-pubescent. — 2. *R. hirta.*
    - Foliage and twigs glabrous, glaucous. — 3. *R. glabra.*
- Leaflets 3; flowers appearing before the leaves.
  - Leaflets 1′–3′ long, pubescent, crenate-dentate. — 4. *R. aromatica.*
  - Leaflets ½′–1′ long, glabrate, with few rounded teeth. — 5. *R. trilobata.*

Fruit glabrous; stone striate.
- Leaflets 7–13, glabrous. — 6. *R. Vernix.*
- Leaflets 3, slightly pubescent beneath. — 7. *R. radicans.*

1. Rhus copallina L. Dwarf, Black or Mountain Sumac. Upland Sumac. (Fig. 2347.)



Rhus copallina L. Sp. Pl. 266. 1753.

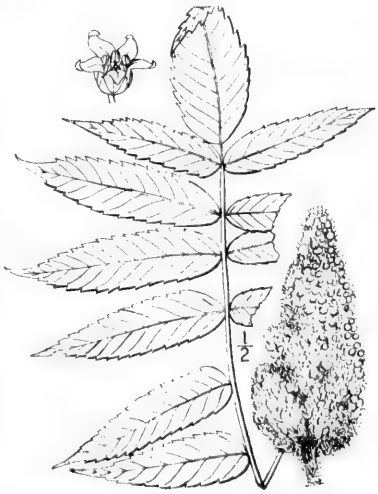
A shrub, or sometimes a small tree, with maximum height of about 30° and trunk diameter of 10′. Leaves pinnate, 6′–12′ long, the petiole and rachis more or less pubescent; leaflets 9–21, ovate-lanceolate or oblong-lanceolate, inequilateral, acute or obtusish at each end, entire, or few-toothed toward the apex, dark green and glabrous above, paler and often pubescent beneath; rachis wing-margined between the leaflets; flowers polygamous, green, 1½″ broad, in dense terminal panicles; pedicels and calyx finely pubescent; drupe compressed, 2″ in diameter, crimson, covered with short fine acid hairs; stone smooth.

In dry soil, Maine and southern Ontario to Florida, west to Minnesota, Nebraska and Texas. Not poisonous. Leaves and bark contain much tannin and are collected in large quantities in the southern States, and ground for tanning leather. Wood soft, light brown; weight per cubic foot 33 lbs. Ascends to 2600 ft. in North Carolina. June–Aug.

2. Rhus hirta (L.) Sudw. Staghorn Sumac. (Fig. 2348.)

Datisca hirta L. Sp. Pl. 1037. 1753.
Rhus typhina L. Amoen. Acad. 4: 311. 1760.
Rhus hirta Sudw. Bull. Torr. Club, 19: 82. 1892.

A small tree, with maximum height of 40° and trunk diameter of 9′, or often shrubby. Leaves pinnate, 8′–15′ long; petioles, rachis and twigs more or less densely velvety-pubescent; leaflets 11–31, lanceolate or oblong-lanceolate, 3′–5′ long, acuminate at the apex, rounded at the base, sharply serrate, dark green and nearly glabrous above, pale and more or less pubescent beneath; panicles terminal, dense; flowers green, polygamous, 1¼″ broad; drupe globose, 1½″–2″ in diameter, very densely covered with bright crimson hairs; stone smooth.



In dry or rocky soil, Nova Scotia to Georgia, especially along the mountains, west to southern Ontario, Minnesota, Missouri and Mississippi. Wood soft, greenish-yellow; weight per cubic foot 27 lbs. Bark rich in tannin. A form with laciniate leaflets has been found in New Hampshire. June. This and the next sometimes called Vinegar Tree.

3. Rhus glàbra L. Smooth Upland or Scarlet Sumac. (Fig. 2349.)

Rhus glabra L. Sp. Pl. 265. 1753.

A shrub or rarely a small tree, 2°–20° high, similar to the preceding species, but glabrous and somewhat glaucous. Leaflets 11–31, lanceolate or oblong-lanceolate, 2′–4′ long, acuminate at the apex, rounded and often oblique at the base, dark green above, whitish beneath, sharply serrate, rachis not winged; pedicels sometimes slightly pubescent; inflorescence and fruit similar to those of the two preceding species; drupe covered with short reddish acid hairs; stone smooth.

In dry soil, Nova Scotia to British Columbia, south to Florida, Mississippi and Arizona. Foliage sometimes used for tanning. This species and the two preceding sometimes have the whole or a part of the flower-clusters changed into small leaves. A form with laciniate leaflets occurs in southern Pennsylvania and Delaware. June–Aug.

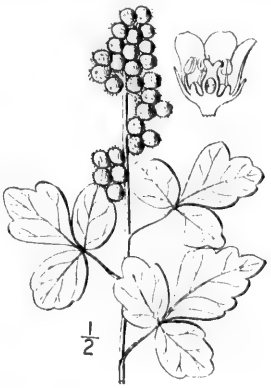
4. Rhus aromática Ait. Fragrant or Sweet-scented Sumac. (Fig. 2350.)

Toxicodendron crenatum Mill. Gard. Dict Ed. 8, no. 5. 1768?
Rhus aromatica Ait. Hort. Kew. 1: 367. 1789.
Rhus Canadensis Marsh. Arb. Am. 129. 1785. Not Mill. 1768.

A shrub, 3°–8° high, ascending or diffuse. Leaves petioled, 3-foliolate, 2′–4′ long, aromatic; leaflets ovate or rhomboid, 1′–2′ long, 9″–18″ wide, the lateral ones sessile, the terminal short-stalked, acute or obtusish at the apex, the lateral rounded or truncate, the terminal cuneate at the base, all crenate or crenate-dentate with numerous large teeth, and pubescent, especially when young; flowers yellowish green, about 1″ broad, in clustered spikes appearing before the leaves; drupe globose, red, pubescent; stone smooth.

In rocky woods, Ontario and Vermont to Florida, especially along the mountains, west to Minnesota, Arkansas and Louisiana. The catkin-like spikes are developed on the branches in late autumn. March–April.

5. Rhus trilobàta Nutt. Ill-scented Sumac. Skunk-bush. (Fig. 2351.)



Rhus trilobata Nutt.; T. & G. Fl. N. A. 1: 219. 1838.
Rhus aromatica var. *trilobata* A. Gray; S. Wats. Bot. King's Exp. 53. 1871.

A glabrous or nearly glabrous shrub, 2°–6° high. Leaves petioled, 3-foliolate, unpleasantly odorous, 1′–2′ long; leaflets sessile, or very nearly so, ½′–1′ long, puberulent when young, glabrous when mature, ovate or oval, obtuse, the terminal one commonly considerably larger than the lateral and cuneate at the base, all crenately few-lobed or toothed or sometimes entire; flowers as in the preceding species, and fruit similar.

Illinois to Nebraska, south to Texas, west to California. March.

6. Rhus Vérnix L. Poison Sumac. Poison Elder. (Fig. 2352.)

Rhus Vernix L. Sp. Pl. 265. 1753.
Toxicodendron pinnatum Mill. Gard. Dict. Ed. 8, no. 4. 1768.
Rhus venenata DC. Prodr. 2: 68. 1825.

A shrub or small tree, with maximum height of 25° and trunk diameter of 6′. Leaves petioled, pinnate, 6′–15′ long, glabrous or somewhat puberulent; leaflets 7–13, thin, obovate, oval, or the lowest ovate, 2′–4′ long, 1′–1½′ wide, green both sides, entire, short-acuminate at the apex, narrowed or rounded at the base, short-stalked; rachis terete; flowers green, about 1″ broad, in loose axillary panicles 3′–8′ long; drupe globose-oblong, 2″ in diameter, gray, glabrous; stone striate.

In swamps, southern Ontario and near the coast in the Eastern and Middle States, south to Florida, west to Minnesota, Missouri and Louisiana. Very poisonous. Wood soft, yellowish brown; weight per cubic foot 27 lbs. June. Called also Poison Ash, Swamp or Poison Dogwood.

7. Rhus radicans L. Poison, Climbing or Three-leaved Ivy. Poison Oak. Climath. (Fig. 2353.)

Rhus radicans L. Sp. Pl. 266. 1753.
Rhus Toxicodendron of American authors, in part, not L.
Toxicodendron vulgare Mill. Gard. Dict. Ed. 8, no. 1. 1768.

A woody vine, climbing by numerous aerial rootlets, or erect and bushy, the stem sometimes 3′–4′ in diameter. Leaves petioled, 3-foliolate, more or less pubescent, especially beneath; leaflets ovate or rhombic, 1′–4′ long, entire or sparingly dentate or sinuate, acute or short-acuminate at the apex, the lateral sessile or short-stalked, inequilateral, the terminal one stalked, rounded or narrowed at the base; flowers green, 1½″ broad, in loose axillary panicles, 1′–3′ long; fruit similar to that of the preceding.

Thickets and along fences, etc., often ascending high trees, Nova Scotia to British Columbia, south to Florida, Arkansas and Utah. Ascends to 2200 ft. in Virginia. Very poisonous. May–June.

Rhus Toxicodendron L., is a shrub of the Southern States, with crenately-lobed very pubescent leaflets.

2. CÓTINUS Adans. Fam. Pl. 2: 345. 1763.

Shrubs or small trees, with alternate petioled ovate oval or obovate entire leaves, and small polygamous slender-pedicelled flowers in large terminal panicles. Calyx 5-parted, the segments imbricated, obtuse. Petals longer than the calyx, imbricated. Stamens 5. Ovary obovoid; styles 3, lateral; stigmas very small. Drupe obliquely oblong or oval, compressed, gibbous, 1-seeded. Seed nearly as in *Rhus*. [Greek name of the oleaster, or wild olive.]

Two known species, the following of southeastern North America, the other of Europe and Asia.

1. Cotinus cotinoides (Nutt.) Britton. Wild or American Smoke-tree. Chittam-wood. (Fig. 2354.)

Rhus cotinoides Nutt.; T. & G. Fl. N. A. 1: 217. As synonym, 1838.
Cotinus Americanus Nutt. Sylva, 3: *pl. 81*. 1849.
Cotinus cotinoides Britton, Mem. Torr. Club, 5: 216. 1894.

A small widely branched tree, with maximum height of about 40° and trunk diameter of 15′. Leaves oval or slightly obovate, thin, glabrous or sparingly pubescent beneath 3′–6′ long, 1½′–2′ wide, obtuse at the apex, narrowed and commonly acute or acutish at the base, the blade slightly decurrent on the petiole; flowers 1″–1½″ broad, green, borne in loose large terminal panicles; pedicels elongating to 1′–1½′ and becoming very plumose in fruit; drupe reticulate-veined, 2″ long.

Missouri and the Indian Territory, east to Tennessee and Alabama. Wood soft, orange-yellow, yielding a rich dye; weight per cubic foot 40 lbs. Very nearly related to the European *C. Cotinus*, which differs in its smaller coriaceous leaves, more pubescent, mostly rounded and obtuse at base. April–May.

Family 63. **CYRILLÀCEAE** Lindl. Veg. King. 445. 1847.

CYRILLA FAMILY.

Glabrous shrubs, or small trees, with simple entire thick alternate exstipulate leaves, long-persistent or evergreen, and small regular perfect bracted racemose flowers. Sepals 4–8 (mostly 5), persistent. Petals the same number as the sepals, hypogynous, distinct, or slightly united by their bases, deciduous. Stamens 4–10, in 1 or 2 series, distinct, hypogynous; anthers introrse, 2-celled, the sacs longitudinally dehiscent. Ovary 2–5-celled; ovules 1–4 in each cavity, anatropous, pendulous; style short or none; stigma very small, or 2–3-lobed. Fruit dry, small, 1–5-seeded. Seeds oblong or spindle-shaped; endosperm fleshy; embryo central, cylindric.

Three genera and 6 known species, natives of America.

1. **CYRÍLLA** Garden; L. Mant. 1: 5. 1767.

Racemes clustered at the ends of twigs of the preceding season. Sepals 5, firm, acute, shorter than the petals. Petals 5, white, acute, spreading. Stamens 5, opposite the sepals, the filaments subulate, the anthers oval. Ovary ovoid, sessile, mostly 2-celled, sometimes 3-celled; ovules 2–4 in each cavity; style short, thick, 2–3-lobed. Fruit ovoid, 2–3-seeded, the pericarp spongy. [In honor of Domenico Cyrillo, professor of medicine at Naples.]

Two species, natives of southeastern North America.

1. Cyrilla racemiflòra Walt. Southern Leatherwood or Ironwood. (Fig. 2355.)

Cyrilla racemiflora Walt. Fl. Car. 103. 1788.

A shrub or small tree, sometimes 35° high and the trunk 15′ in diameter, the bark at the base spongy. Leaves oblanceolate, obovate or oval, short-petioled, reticulate-veined and the midvein rather prominent beneath, obtuse or acute at the apex, cuneate-narrowed at the base, 2′–4′ long, 3″–1′ wide; racemes narrow, 2′–6′ long, bearing the very numerous small white flowers nearly to the base; pedicels 1″–2″ long, somewhat longer than the bracts, or shorter; fruit about 1″ long.

Along streams and swamps, southern Virginia to Florida and Texas, mostly near the coast. Also in the West Indies and South America. May–July.

Family 64. **ILICÀCEAE** Lowe, Fl. Mad. 2: 11. 1868.

Holly Family.

Shrubs or trees, with watery sap, and alternate petioled simple often coriaceous leaves. Flowers axillary, small, clustered or solitary, white, mainly polygamo-dioecious, regular. Stipules minute and deciduous, or none. Calyx 3–6-parted, generally persistent. Petals 4–6 (rarely more), separate, or slightly united at the base, hypogynous, deciduous, imbricated. Stamens hypogynous, as many as the petals, or sometimes more; anthers oblong, cordate. Disk none. Ovary 1, superior, 3–several-celled; stigma discoid or capitate; style short or none; ovules 1 or 2 in each cavity of the ovary. Fruit a small berry-like drupe, enclosing several nutlets. Seed pendulous; endosperm fleshy; embryo straight.

Five genera and about 170 species, natives of temperate and tropical regions.

Petals oblong or obovate, slightly united.	1. *Ilex.*
Petals linear, distinct.	2. *Ilicioides.*

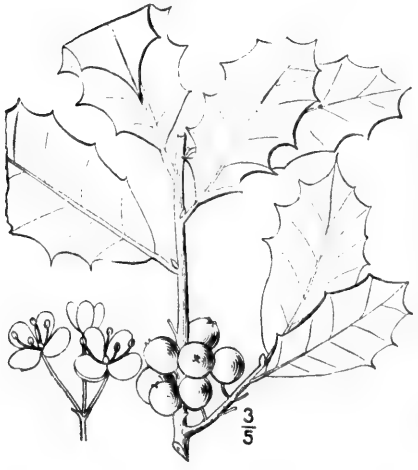
1. **ÌLEX** L. Sp. Pl. 125. 1753.

Shrubs or trees, with entire dentate or spiny-toothed, minutely stipulate leaves, and axillary cymose or solitary, perfect or polygamous flowers. Calyx small, 4–5-cleft or toothed. Petals 4–9, somewhat united at the base, oblong, obtuse. Stamens of the same number, adnate to the base of the corolla. Berry-like drupe globose, with 4–8 bony or crustaceous nutlets. [Ancient name of the Holly Oak.]

About 160 species, mostly natives of America, some in Asia, Africa and Australia. In addition to the following, some 5 others occur in the southeastern United States.

Leaves, thick evergreen, persistent.	
Nutlets ribbed.	
Leaves spiny-toothed.	1. *I. opaca.*
Leaves dentate or entire, not spiny.	
Leaves entire or few-toothed; calyx-lobes acute.	2. *I. Cassine.*
Leaves coarsely crenate; calyx-lobes obtuse.	3. *I. vomitoria.*
Nutlets not ribbed; leaves dotted beneath.	4. *I. glabra.*
Leaves thin, deciduous.	
Nutlets ribbed; peduncles 1-flowered.	
Leaves small, obovate or spatulate, crenate.	5. *I. decidua.*
Leaves large, ovate or lanceolate, sharply serrate.	6. *I. monticola.*
Nutlets not ribbed.	
Flowers all short-pedicelled.	7. *I. verticillata.*
Staminate flowers on long and slender pedicels.	8. *I. laevigata.*

1. Ilex opàca Ait. American Holly. (Fig. 2356.)



Ilex opaca Ait. Hort. Kew. 1: 169. 1789.

A tree of slow growth, sometimes 50° high, and with a trunk diameter of 3½°. Young twigs sparingly pubescent; leaves elliptical or obovate, 2′–4′ long, 1′–1½′ wide, evergreen, glabrous on both sides, obtuse or acutish at the apex, spiny-tipped, spinose-dentate, at least toward the apex, rarely nearly or quite entire; petioles 2″–4″ long, sometimes puberulent; peduncles 2-bracted; staminate cymes 3–10-flowered, ½′–1′ long; fertile flowers mostly scattered and solitary; calyx-lobes acute, ciliate; stigma sessile; drupe globose or globose-oblong, red, rarely yellow, 4″–5″ in diameter; nutlets ribbed.

In moist woods, southern Maine to Florida, west to Pennsylvania, Missouri and Texas. Most abundant near the coast. Wood hard, nearly white; weight per cubic foot 36 lbs. Ascends to 3000 ft. in North Carolina. April–June.

2. Ilex Cassine L. Dahoon Holly. (Fig. 2357.)

Ilex Cassine L. Sp. Pl. 125. 1753.
Ilex Dahoon Walt. Fl. Car. 241. 1788.

A shrub, or small tree, with maximum height of about 25° and trunk diameter of 18′. Twigs pubescent; leaves coriaceous, evergreen, oblanceolate or oblong-obovate, 2′–4′ long, ½′–1′ wide, acutish or obtuse at the apex, acute at the base, entire, or with a few sharp teeth, glabrous and dark green above, pale and usually pubescent beneath, especially on the strong midrib; petioles 3″–4″ long; staminate cymes several- or many-flowered; peduncles and pedicels pubescent; fertile cymes commonly 3-flowered; calyx-lobes acute, ciliate; drupes red, globose, 2″–3″ in diameter, on pedicels of about the same length.

In low woods, southern Virginia to Florida, near the coast, west to Louisiana. Wood soft, light brown; weight per cubic foot 30 lbs. May.

3. Ilex vomitòria Ait. Cassena. Yaupon. (Fig. 2358.)

Ilex Cassine Walt. Fl. Car. 241. 1788. Not L. 1753.
Ilex vomitoria Ait. Hort. Kew. 1: 170. 1789.

A shrub, or small tree, with maximum height of about 25° and trunk diameter of 4′–6′. Petioles and young twigs puberulent; leaves ovate-oblong or elliptic, ½′–1½′ long, 4″–9″ wide, obtuse at both ends, crenate, glabrous, evergreen, pale beneath, dark green above; petioles 1″–2″ long; staminate cymes several-flowered, short-peduncled; fertile cymes sessile, 1–3-flowered; pedicels longer than the petioles; calyx-lobes obtuse; drupe globose, red, 2″–3″ in diameter; nutlets ribbed.

In low woods, Virginia to Florida, west to Arkansas and Texas. Also in Bermuda. Wood hard, nearly white; weight per cubit foot 45 lbs. Called also Appalachian, Carolina, or South Sea Tea. May.

4. Ilex glàbra (L.) A. Gray. Inkberry. Evergreen Winterberry. (Fig. 2359.)

Prinos glaber L. Sp. Pl. 330. 1753.
Ilex glabra A. Gray, Man. Ed. 2, 264. 1856.

A shrub, 2°–6° high. Young twigs and petioles finely puberulent; leaves coriaceous, evergreen, dark green and shining above, paler and dotted beneath, oblanceolate or elliptic, 1′–2′ long, 5″–9″ wide, generally cuneate at the base, obtusish and few-toothed at the apex, or sometimes entire; petioles 2″–4″ long; sterile cymes several-flowered, slender-peduncled; fertile flowers generally solitary, sometimes 2 or 3 together; calyx-segments acutish or obtuse; drupe black, 2″–3″ in diameter; nutlets not ribbed.

In sandy soil, eastern Massachusetts to Florida, west to Louisiana, mainly near the coast. Reported from Nova Scotia. June-July.

5. Ilex decidua Walt. Swamp or Meadow Holly. (Fig. 2360.)

Ilex decidua Walt. Fl. Car. 241. 1788.

A shrub, or small tree, with a maximum height of 30° and trunk diameter of 8′ or 10′. Twigs light gray, glabrous; leaves obovate or spatulate-oblong, 1½′–3′ long, 4″–8″ wide, crenate, deciduous, dark green, glabrous and with impressed veins on the upper surface, paler and pubescent beneath, especially on the midrib, acute or cuneate at the base, blunt at the apex or sometimes emarginate; pedicels slender, 1-flowered, several often appearing from near the same point, bractless; calyx-lobes ovate, obtuse; drupe red, depressed-globose, 2″–3″ in diameter; nutlets ribbed.

In swamps and low grounds, southern Virginia to Florida, west to Kansas, Missouri and Texas. Wood hard, white; weight per cubic foot 46 lbs. Flowers unfolding with the leaves in May.

6. Ilex monticola A. Gray. Large-leaved Holly. (Fig. 2361.)

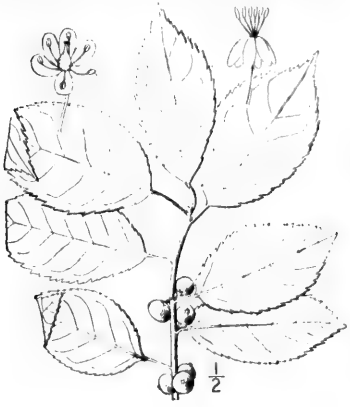
I. montana T. & G.; A. Gray, Man. 276. 1848. Not Griseb.
Ilex monticola A. Gray, Man. Ed. 2, 264. 1856.
Ilex Amelanchier var. *monticola* Wood. Bot. & Flor. 208. 1873.

A shrub, or occasionally forming a slender erect tree, with a maximum height of about 40°. Leaves rather thin, deciduous, ovate or ovate-lanceolate, 2′–6′ long, ½′–2½′ wide, sharply serrate or serrulate, acuminate or acute, glabrous on both sides or somewhat pubescent beneath, especially along the veins; petioles 4″–8″ long; pedicels 1-flowered, bractless, the sterile clustered, the fertile mostly solitary; calyx-lobes acute or acutish, ciliate, not hairy; drupes red, globose-ovoid, 2″–3″ in diameter; nutlets ribbed.

Mountain woods, New York and Pennsylvania, south to North Carolina and Alabama. May.

Ilex monticola mollis (A. Gray) Britton, Mem. Torr. Club, 5: 217. 1894.
Ilex mollis A. Gray, Man. Ed. 5, 306. 1867.

Leaves proportionately broader, 1½′–2½′ long, 1′–2′ wide, broadly ovate or oval, short-acuminate, densely soft-pubescent beneath, glabrous, or with a few scattered hairs above, becoming glabrate with age; calyx-lobes downy-pubescent. In mountain woods, Pennsylvania to Georgia.



7. Ilex verticillàta (L.) A. Gray. Virginia Winter-berry. Black Alder. Fever-bush. (Fig. 2362.)

Prinos verticillatus L. Sp. Pl. 330. 1753.
Ilex verticillata A. Gray, Man. Ed. 2, 264. 1856.

A shrub, 6°–25° high. Twigs glabrous or slightly pubescent; leaves oval, obovate or oblong-lanceolate, 2′–3′ long, about 1′ wide, acute or acuminate at the apex, acute or obtusish at the base, rather thick and coriaceous, dark green and nearly glabrous above, pubescent, especially on the veins beneath, sharply serrate; staminate cymes clustered, 2–10-flowered, the fertile 1–3-flowered; pedicels 2-bracted; calyx-lobes obtuse, ciliate; drupes bright red, (rarely white), clustered so as to appear verticillate, about 3″ in diameter; nutlets smooth.

In swamps, Nova Scotia to Florida, west to western Ontario, Wisconsin and Missouri. The leaves turn black in autumn. June–July.

Ilex verticillàta tenuifòlia Torr. Fl. North. U. S. 338. 1824.
Leaves broadly obovate, obtuse but mucronulate, membranous. Maine to New Jersey.

Ilex verticillàta padifòlia (Willd.) T. & G.; S. Wats. Bibl. Index, 1: 160. 1878.
Leaves smaller, broadly oval or nearly orbicular, thick. Northern New York to Pennsylvania.

8. Ilex laevigàta (Pursh) A. Gray. Smooth Winter-berry. (Fig. 2363.)

Prinos laevigatus Pursh, Fl. Am. Sept. 220. 1814.
Ilex laevigata A. Gray, Man. Ed. 2, 264. 1856.

A shrub, much resembling the preceding species. Twigs glabrous; leaves oval or oblong, thin, 1′–2′ long, mainly acute or acutish at each end, glabrous on both sides or sometimes villous on the veins beneath, turning yellow in autumn, finely serrulate; staminate flowers solitary or occasionally 2 together, on very slender pedicels 5″–9″ long; fertile flowers solitary, much shorter-peduncled; calyx-lobes acute, glabrous; drupes larger than in *I. verticillata*, orange-red, ripening earlier, on stalks about equal to their diameter.

In swamps, Maine to Pennsylvania and Virginia. Blooms earlier than the preceding. May–June.

2. ILICIOÌDES Dumont. Bot. Cult. 4: 127. *pl. 4.* 1802.

[NEMOPANTHES Raf. Journ. Phys. 89: 96. 1819.

A glabrous shrub, with slender-petioled oblong deciduous leaves, and polygamo-dioecious axillary small flowers. Calyx of the staminate flowers none, that of the pistillate minute, 4–5-toothed. Petals 4–5, distinct, linear. Stamens 4 or 5, free from the corolla; anthers ovoid-globose. Ovary 3–5-lobed, 3–5-celled; ovules 1 in each cavity; stigmas 3–5, sessile. Drupe subglobose. Nutlets 4 or 5. [Greek, resembling holly.]

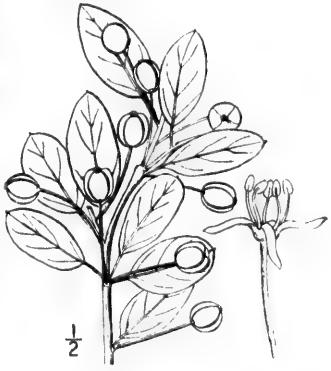
A monotypic genus of eastern North America.

1. Ilicioides mucronàta (L.) Britton. Wild or Mountain Holly. (Fig. 2364.)

Vaccinium mucronatum L. Sp. Pl. 350. 1753.
Nemopanthes fascicularis Raf. Journ. Phys. 89: 97. 1819.
N. Canadensis DC. Mem. Soc. Gen. 1: 450. 1821.
I. mucronata Britton, Mem. Torr. Club, 5: 217. 1894.

A shrub, 6°–8° high, with ash-colored bark. Leaves elliptic or obovate, ¼′–2′ long, acutish or mucronate at the apex, obtuse or acute at the base, entire or with a few small teeth; petioles 3″–6″ long; flowers of both kinds solitary, or the staminate sometimes 2–4 together; pedicels very slender, often 1¼′ long; drupe red, 3″–4″ in diameter; nutlets faintly ribbed.

In swamps, Nova Scotia to western Ontario, south to Wisconsin, Indiana and Virginia. May.



Family 65. CELASTRÀCEAE Lindl. Nat. Syst. Ed. 2, 119. 1836.

STAFF-TREE FAMILY.

Trees or shrubs, often climbing. Leaves alternate or opposite, simple. Stipules, when present, small and caducous. Flowers regular, generally perfect, small. Pedicels commonly jointed. Calyx 4–5-lobed or parted, persistent, the lobes imbricated. Petals 4–5, spreading. Stamens inserted on the disk, alternate with the petals. Disk conspicuous, flat or lobed. Ovary sessile, its base distinct from or confluent with the disk, mostly 3–5-celled; style short, thick; stigma entire or 3–5-lobed; ovules 2 in each cell, anatropous. Fruit (in our species) a somewhat fleshy dehiscent 2–5-celled pod. Seeds arilled; embryo large; cotyledons foliaceous.

About 40 genera and 350 species, widely distributed in warm and temperate regions.

Leaves opposite; large erect or decumbent shrubs; fruit 3–5 lobed; aril red. 1. *Euonymus.*
low spreading shrubs; fruit oblong; aril whitish. 2. *Pachystima.*
Leaves alternate; woody vine. 3. *Celastrus.*

1. EUÓNYMUS L. Sp. Pl. 197. 1753.

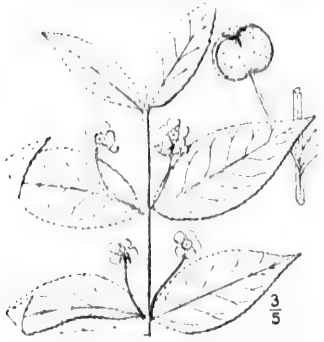
Shrubs, with opposite petioled entire or serrate leaves, and perfect cymose axillary greenish or purple flowers. Calyx 4–5-cleft, the lobes spreading or recurved. Petals 4 or 5, in-

serted beneath the 4–5-lobed disk. Stamens 4 or 5, inserted on the disk. Ovary 3–5 celled; style short or none; stigma 3–5-lobed. Capsule 3–5-celled, 3–5-lobed, angular, rounded or winged, the cavities 1–2 seeded, loculicidally dehiscent. Seeds enclosed in the red aril.

About 65 species, of the north temperate zone. Besides the following, 2 others occur in California.

Pods tuberculate; low shrubs; flowers greenish pink.
- Erect or ascending; leaves ovate-lanceolate, acuminate. 1. *E. Americanus.*
- Decumbent, rooting at the nodes; leaves obovate, obtuse. 2. *E. obovatus.*

Pods smooth; high shrubs.
- Flowers purple; cymes 6–15-flowered. 3. *E. atropurpureus.*
- Flowers greenish yellow; cymes 3–7-flowered. 4. *E. Europaeus.*



1. Euonymus Americànus L. Strawberry Bush. (Fig. 2365.)

Euonymus Americanus L. Sp. Pl. 197. 1753.

A shrub, 2°–8° high, with 4-angled and ash-colored twigs, divaricately branching. Leaves ovate-lanceolate or oblong-lanceolate, thick, 1½′–3′ long, ½′–1′ wide, acuminate at the apex, acute or obtuse at the base, nearly sessile, crenulate, glabrous, or sparingly hairy on the veins beneath; peduncles 6″–12″ long, very slender, 1–3-flowered; flowers greenish, 5″–6″ broad; petals separated, the blade nearly orbicular, erose or undulate, the claw short; capsule slightly 3–5-lobed, not angular, depressed, tuberculate.

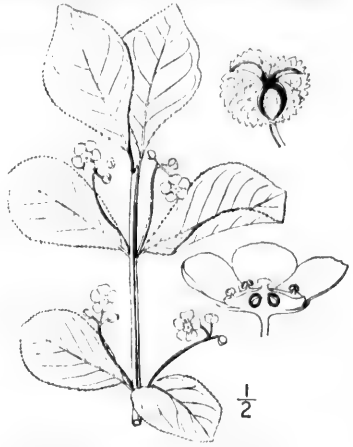
In low woods, southern New York to Florida, Arkansas and Texas. June. Called also Burning Bush.

2. Euonymus obovàtus Nutt. Running Strawberry Bush. (Fig. 2366.)

Euonymus obovatus Nutt. Gen. 1: 155. 1818.
Euonymus Americanus var. *obovatus* T. & G.; A. Gray, Gen. 2: 188. 1849.

A low decumbent shrub, seldom rising over a foot from the ground, branching, rooting from the prostrate twigs. Branches 4-angled or slightly winged; leaves obovate or elliptic-obovate, rather thin, mostly acute or cuneate at the base, obtuse at the apex, finely crenulate-serrulate, 1′–2′ long, ½′–1½′ wide, glabrous; petioles 1″–2″ long; peduncles 1–4-flowered; flowers greenish, smaller than in the preceding species, about 3″ broad; petals generally 5, nearly orbicular, crenulate or erose, close together or even slightly overlapping, with scarcely any claw; capsule commonly 3-celled, slightly lobed, depressed, tuberculate.

In low woods, southern Ontario to Pennsylvania, northern New Jersey (?), Indiana and Kentucky. Blooms earlier than *E. Americanus*. April–May.



3. Euonymus atropurpùreus Jacq. Burning Bush. Wahoo. (Fig. 2367.)

Euonymus atropurpureus Jacq. Hort. Vind. 2: 5. *pl. 120.* 1772.

A shrub or small tree, 6°–25° high. Twigs obtusely 4-angled; leaves ovate-oblong or elliptic, 1½′–5′ long, 1′–2½′ wide, acuminate at the apex, acute or obtuse at the base, puberulent, especially beneath, crenulate-serrulate, rather thin; petioles 4″–8″ long; peduncles very slender, 1′–2′ long, bearing a trichotomous 5–15-flowered cyme; pedicels 3″–6″ long; flowers purple, 5″–6″ broad; petals commonly 4, obovate, undulate; capsule smooth, deeply 3–4-lobed, 6″–8″ broad.

Ontario to Florida, Montana and the Indian Territory. Wood nearly white; weight per cubic foot 41 lbs. Called also Indian Arrow. June.

4. Euonymus Europæus L. Spindle-tree. (Fig. 2368.)

Euonymus Europaeus L. Sp. Pl. 197. 1753.

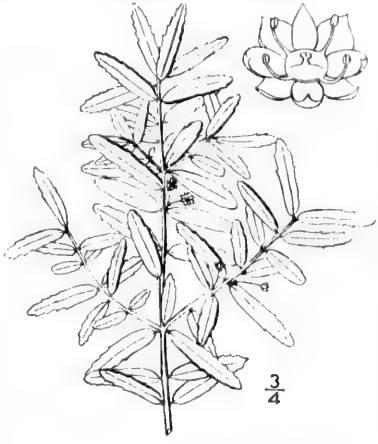
A glabrous shrub, 3°–9° high, resembling the preceding species. Leaves oblong, to ovate-lanceolate, acuminate, crenulate; peduncles mostly less than 1′ long, stouter; cymes 3–7-flowered; flowers greenish yellow, about 5″ broad; petals 4 (rarely 5), oblong or obovate; capsule smooth, deeply 4-lobed.

Escaped from cultivation into copses and along roadsides. Southern New York and New Jersey. June. Old English names Arrowbeam, Prick-timber, Prickwood, Cat-tree, Pegwood, Pincushion shrub, Skiver-wood, Witchwood.

2. PACHÝSTIMA Raf. Am. Month. Mag. **2**: 176. 1818.

Low branching glabrous shrubs, with corky branches, opposite coriaceous evergreen leaves, and small axillary solitary or clustered, perfect brownish flowers. Calyx-lobes 4, broad. Petals 4, spreading. Stamens 4, inserted beneath the disk; filaments longer than the anthers. Ovary immersed in the disk, 2-celled; ovules 2 in each cell, erect; style very short; stigma slightly 2-lobed. Capsule oblong, compressed, 2-celled, at length loculicidally dehiscent, 1–2-seeded. Seeds oblong with a white many-lobed aril at the base.

Two species, natives of North America. *P. Myrsinites* occurs in the Rocky Mountains.



1. Pachystima Cánbyi A. Gray. Canby's Mountain Lover. (Fig. 2369.)

Pachystima Canbyi A. Gray, Proc. Amer. Acad. 8: 623. 1873.

A shrub 4′–12′ high, with decumbent rooting branches. Leaves oblong, or slightly obovate, 6″–10″ long, 1½″–2″ wide, obtuse at each end, very short-petioled, pale green, serrate, the margins revolute; peduncles 1–3-flowered, 2-bracted below the middle; pedicels slender and 2-bracted near the base; calyx-lobes oval, about equalling the petals; capsule oblong, about 4″ long and 2″ in diameter, dehiscent at maturity.

On dry exposed rocks, mountains of Virginia and West Virginia. April–May.

3. CELÁSTRUS L. Sp. Pl. 196. 1753.

Shrubs, mainly climbing, with alternate thin deciduous leaves, and terminal or axillary, racemose or paniculate, small dioecious or polygamous flowers. Calyx 5-lobed. Petals 5, inserted under the disk. Stamens in the sterile flowers 5, inserted at the sinuses of the 5-lobed disk. Ovary inserted on the disk, 2–4-lobed, 2–4-celled; style thick; stigma 2–4-lobed; ovules 2 in each cell, erect. Capsule 2–4-celled, loculicidally dehiscent into as many valves. Seeds 1–2 in each cell, enclosed in a scarlet aril; embryo straight; endosperm fleshy; cotyledons flat, coriaceous. [Greek name of some evergreen tree.]

About 30 species, 1 in North America, numerous in eastern Asia, several in Australia and Madagascar.

1. Celastrus scándens L. Shrubby or Climbing Bittersweet. Waxwork. Staff-tree. (Fig. 2370.)

Celastrus scandens L. Sp. Pl. 196. 1753.

A twining woody vine, ascending trees to a height of 25° or more, or trailing on the ground where it lacks support. Leaves alternate, somewhat 2-ranked by the twisting of the stem, ovate, oval or obovate, 2′–4′ long, 1′–2′ wide, glabrous on both sides, acuminate or acute at the apex, acute or rounded at the base, crenulate; petioles 6″–9″ long; flowers greenish, about 2″ broad, in terminal compound racemes 2′–4′ in length; petals crenate, much longer than the calyx-lobes; capsule yellow, or orange, 5″–6″ in diameter, opening in autumn and exposing the showy red aril.

In rich soil, Quebec to North Carolina, especially along the mountains, west to Manitoba, Kansas, the Indian Territory and New Mexico. Foliage sometimes variegated. June. Called also Staff-vine, Fever-twig, and False Bitter-sweet.

Family 66. **STAPHYLEÀCEAE** DC. Prodr. 2: 2. 1825.

BLADDER-NUT FAMILY.

Trees or shrubs, with mostly opposite odd-pinnate or 3-foliolate stipulate leaves, and regular perfect flowers in terminal or axillary clusters. Sepals, petals and stamens usually 5. Carpels mostly 3. Disk large, the stamens inserted at its base without. Anthers introrse, 2-celled. Fruit a dehiscent bladdery capsule in the following genus, indehiscent in some others. Seeds solitary or few in each carpel; testa hard; endosperm fleshy; embryo straight.

About 5 genera, and 22 species, widely distributed.

1. STAPHYLÈA L. Sp. Pl. 270. 1753.

Shrubs, with opposite 3-foliolate or pinnate leaves, and axillary drooping racemes or panicles of white flowers. Pedicels jointed. Sepals imbricated. Petals the same number as the sepals and about equalling them. Ovary 2–3-parted, the lobes 1-celled; ovules numerous in each cavity, anatropous. Capsule 2–3-lobed, 2–3-celled. Seeds globose. [Greek, cluster.]

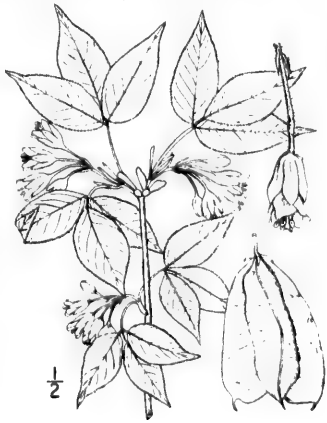
About 6 species, of the north temperate zone. *S. Bolanderi* A. Gray, occurs in California.

1. Staphylea trifòlia L. American Bladder-nut. (Fig. 2371.)

Staphylea trifolia L. Sp. Pl. 270. 1753.

A branching shrub, 6°–15° high, with smooth striped bark. Young leaves and petioles pubescent; mature foliage glabrate; leaves 3-foliolate (rarely 4-foliolate); stipules linear, 4″–6″ long, caducous; leaflets ovate or oval, 1½′–2½′ long, acuminate at the apex, obtuse or somewhat cuneate at the base, finely and sharply serrate, the lateral ones sessile or nearly so, the terminal one stalked; stipels subulate; flowers campanulate, racemed, about 4″ long; pedicels bracted at the base, slightly longer than the flowers; capsule about 2′ long, 1′ wide, much inflated, the 3 (rarely 4) carpels separate at the summit and dehiscent along the inner side.

In moist woods and thickets, Quebec and Ontario to Minnesota, south to South Carolina and Missouri April–May.



Family 67. **ACERÀCEAE** St. Hil. Expos. Fam. 2: 15. 1805.

MAPLE FAMILY.

Trees or shrubs, with watery often saccharine sap, opposite simple and palmately lobed (rarely entire) or pinnate leaves, and axillary or terminal cymose or racemose regular polygamous or dioecious flowers. Calyx generally

5-parted, the segments imbricated. Petals of the same number, or none. Disk thick, annular, lobed, sometimes obsolete. Stamens 4–12, often 8; filaments filiform. Ovary 2-lobed, 2-celled; styles 2, inserted between the lobes. Fruit of 2 long-winged samaras, joined at the base and 1-seeded (rarely 2-seeded). Seeds compressed, ascending; cotyledons thin, folded.

The family consists of the following genus and *Dipteronia* Oliver, of central Asia, which differs from *Acer* in the samara being winged all around. There are about 100 species of Maples.

1. ÀCER L. Sp. Pl. 1055. 1753.

Besides the following, some 5 others occur in southern and western North America.

Leaves simple, palmately lobed.
- Flowers in dense sessile lateral clusters, unfolding before the leaves.
  - Petals none; ovary tomentose; samaras divergent. — 1. *A. saccharinum.*
  - Petals present; ovary glabrous; samaras incurved.
    - Leaves pale and glabrous or but slightly pubescent beneath. — 2. *A. rubrum.*
    - Leaves densely whitish-pubescent beneath; southern. — 3. *A. Drummondii.*
- Flowers corymbose, lateral, unfolding with the leaves.
  - Flowers long-pedicelled, drooping; large trees.
    - Leaves pale and nearly glabrous beneath. — 4. *A. Saccharum.*
    - Leaves green and pubescent, at least on the veins, beneath. — 5. *A. nigrum.*
  - Flowers short-pedicelled, erect; shrub or small tree; western. — 6. *A. glabrum.*
- Flowers racemed, terminal, unfolding after the leaves.
  - Racemes drooping; leaves finely serrate. — 7. *A. Pennsylvanicum.*
  - Racemes erect; leaves coarsely serrate. — 8. *A. spicatum.*

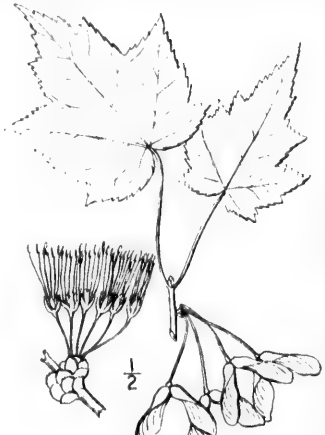
Leaves pinnate. — 9. *A. Negundo.*

1. Acer sacchárinum L. Silver Maple. Soft or White Maple. (Fig. 2372.)

Acer saccharinum L. Sp. Pl. 1055. 1753.
Acer dasycarpum Ehrh. Beitr. 4: 24. 1789.
Acer eriocarpum Michx. Fl. Bor. Am. 2: 253. 1803.

A large tree with flaky bark, maximum height of 100°–120° and trunk diameter of 3°–5°. Leaves 4′–6′ long, deeply 5-lobed, the lobes rather narrow, acuminate, coarsely and irregularly dentate, truncate or slightly cordate at the base, green above, silvery white and more or less pubescent beneath, especially when young; flowers greenish, in nearly sessile lateral corymbs much preceding the leaves; petals none; fruiting pedicels elongating; samaras pubescent when young, divaricate, at length 2′ long, the wing often 6″ wide.

Along streams, New Brunswick to Florida, west to southern Ontario, Dakota, Nebraska and the Indian Territory. The samaras are frequently unequally developed. Wood hard, strong, light colored; weight per cubic foot 32 lbs. Used for furniture and floors. Maple sugar is made from the sap in small quantities. Feb.–April.



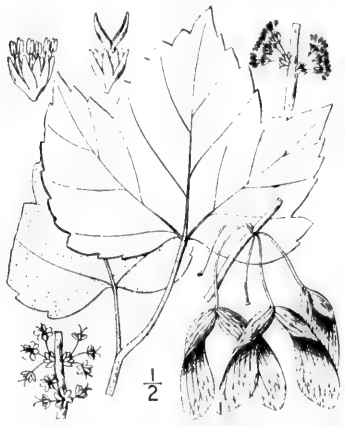
2. Acer rùbrum L. Red, Scarlet or Water Maple. Swamp Maple. (Fig. 2373.)

Acer rubrum L. Sp. Pl. 1055. 1753.

A large tree with flaky or smoothish bark, maximum height about 120° feet and trunk diameter 3°–4½°. Twigs reddish; leaves 3′–4′ long, cordate at the base, sharply 3–5-lobed, the lobes irregularly dentate, acute or acuminate, green above, pale and generally whitish beneath, often more or less pubescent along the veins; flowers reddish or yellowish, in sessile lateral clusters much preceding the leaves; petals narrowly oblong; stamens 3–6; fruiting pedicels elongating; samaras glabrous, slightly incurved, 9″–12″ long, the wing 3″–4″ wide.

In swamps and low grounds, New Brunswick to Manitoba, south to Florida and Texas. Wood hard, not strong; color light reddish brown; weight per cubic foot 38 lbs. Used for furniture, gun-stocks, etc. Foliage crimson in autumn. Ascends to 4000 ft. in Virginia. March–April. Variable.

3. Acer Drummóndii H. & A. Drummond's Maple. (Fig. 2374.)



Acer Drummondii H. & A.; Hook. Journ. Bot. 1: 200. 1834.
Acer rubrum var. *Drummondii* Sarg. 10th Census U. S. 9: 50. 1884.

A large tree, similar to the preceding species. Leaves 3′–6′ long, thicker, 3-lobed, or sometimes 5-lobed, obtuse or cordate at the base, densely whitish tomentose beneath when young, the tomentum persisting, at least along the veins, the lobes shorter, broader, acute or acuminate; young twigs and petioles more or less tomentose; flowers in lateral sessile fascicles unfolding much before the leaves; petals present; fruiting pedicels 1′–2′ long; samaras glabrous, more or less incurved, 1½′–2½′ long, the wing 5″–10″ broad at middle.

In swamps, southern Missouri to Georgia, Florida and Texas. Fruit brilliant scarlet, ripening in March or April.

4. Acer Sáccharum Marsh. Sugar or Rock Maple. Sugar-tree. (Fig. 2375.)

Acer Saccharum Marsh. Arb. Amer. 4. 1785.
Acer saccharinum Wang. Amer. 36. *pl. 2. f. 26.* 1787. Not L. 1753.
Acer barbatum Michx. Fl. Bor. Am. 2: 252. 1803.

A large and very valuable tree, with maximum height of 100°–120° and trunk diameter of 2½°–3½°. Leaves 3′–6′ long, dark green above, pale beneath, cordate or truncate at the base, 3–7-lobed, the lobes acuminate, irregularly sinuate, the sinuses rounded; flowers in sessile, lateral or terminal corymbs, greenish yellow, drooping on capillary hairy pedicels, appearing with the leaves; petals none; samaras glabrous, slightly diverging, 1′–1½′ long, the wing 3″–5″ wide.

In rich woods, Newfoundland to Manitoba, south, especially along the mountains, to Florida, Nebraska and Texas. Its sap is the main source of maple sugar. Wood hard, strong, light reddish-brown; weight per cubic foot 43 lbs. The bird's-eye and curled maple of cabinet makers are varieties. April–May.

5. Acer nigrum Michx. Black Sugar Maple. (Fig. 2376.)

Acer nigrum Michx. f. Hist. Arb. Am. 2: 238. *pl. 16.* 1810.
Acer saccharinum var *nigrum* T. & G. Fl. N. A. 1: 248. 1838.
Acer Saccharum var. *nigrum* Britton, Trans. N. Y. Acad. Sci. 9: 10. 1889.

A tree, nearly or quite as large as the Sugar Maple, with rough, blackish bark. Leaves similar, but green both sides, thicker and generally more or less pubescent beneath, especially along the veins; lobes much broader and shorter, with few undulations or frequently entire, the basal sinus often narrow; samaras slightly more divergent.

Ontario and Vermont to northern Alabama, west to Minnesota, Louisiana and Arkansas. Wood resembling that of the preceding species, the sapal so yielding much sugar. April–May.

6. Acer glàbrum Torr. Dwarf or Rocky Mountain Maple. (Fig. 2377.)

Acer glabrum Torr. Ann. Lyc. N. Y. 2: 172. 1826.
Acer tripartitum Nutt.; T. & G. Fl. N. A. 1: 247. 1838.

A shrub, or small tree, with maximum height of about 35° and trunk diameter of 12′. Leaves 1′–3′ long, often broader, glabrous on both sides, or puberulent when young, 3–5-lobed, the lobes acute or obtusish, sharply serrate, the sinuses acute; flowers yellowish green, in numerous small lateral and terminal sessile corymb-like racemes; pedicels short, glabrous, erect or ascending; samaras glabrous, shining, 9″–15″ long, little diverging; wing 4″–6″ wide.

Borders of streams and hillsides, northwestern Nebraska and throughout the Rocky Mountain region, south to Arizona, west to the Sierra Nevada and British Columbia. Wood hard, light brown. Weight per cubic foot 37 lbs. May

7. Acer Pennsylvánicum L. Striped or Goosefoot Maple. Moosewood. (Fig. 2378.)

Acer Pennsylvanicum L. Sp. Pl. 1055. 1753.
Acer striatum Du Roi, Diss. Inaug. 58. 1771.

A small tree, with maximum height of about 35° and trunk diameter of about 8′, the smoothish green bark striped with darker lines. Leaves large, often 6′–8′ long, broadest above the middle, thin, glabrous above, sparingly pubescent beneath when young, slightly cordate or truncate at the base, finely serrate or serrulate all around, 3-lobed near the apex, the lobes short and acuminate to a long tip; racemes terminal, narrow, drooping, 3′–4′ long; flowers greenish yellow, 3″–4″ broad; unfolding after the leaves; petals obovate; samaras glabrous, 1′ long, widely divergent, the wing 4″–5″ wide.

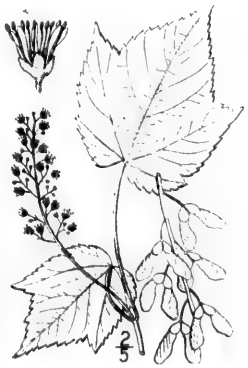
In rocky woods, Nova Scotia to Lake Superior, south, especially along the mountains to Georgia, and Tennessee. Called also False or Striped Dogwood and Whistle-wood. Wood soft, satiny, light brown; weight per cubic foot 33 lbs. Ascends to 5000 ft. in North Carolina. May–June.

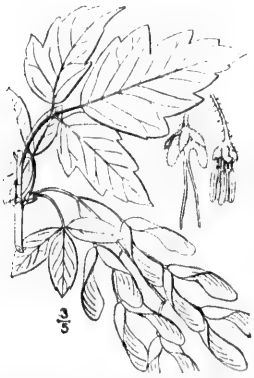
8. Acer spicàtum Lam. Mountain Maple. (Fig. 2379.)

Acer spicatum Lam. Encycl. 2: 381. 1786.
Acer montanum Ait. Hort. Kew. 3: 435. 1789.

A shrub, or rarely a small tree, with maximum height of about 30° and trunk diameter of 8′, the bark green, not striped. Leaves 3′–5′ long, glabrous above, pubescent beneath, at least when young, 3–5-lobed, coarsely serrate, lobes acute or acuminate; racemes compound, erect, rather dense; flowers 1″–1½″ broad, greenish yellow, unfolding after the leaves; petals linear-spatulate; samaras 9″–10″ long, somewhat divergent, the wing 3″–4″ wide.

Damp rocky woods, Newfoundland and James' Bay to Manitoba, south, especially along the mountains, to North Carolina, Tennessee and Minnesota. Wood soft, light reddish brown; weight per cubic foot 33 lbs. Ascends to 5000 ft. in North Carolina. May–June.





9. Acer Negúndo L. Box Elder. Ash-leaved Maple. (Fig. 2380.)

Acer Negundo L. Sp. Pl. 1056. 1753.
Negundo aceroides Moench, Meth. 334. 1794.
Negundo Negundo Karst. Deutsch. Fl. 596. 1880–83.

A tree with maximum height of 60°–70° and trunk diameter of 2°–3½°. Leaves petioled, pinnately 3–5-foliolate; leaflets ovate or oval, pubescent when young, nearly glabrous when old, 2′–5′ long, 1′–3′ wide, dentate, slightly lobed or sometimes entire, acute or acuminate at the apex, rounded, or the terminal one somewhat cuneate at the base; flowers dioecious, drooping, very small, appearing a little before the leaves; samaras glabrous, slightly incurved, 1′–1½′ long, the broad wing finely veined.

Along streams, Vermont and Ontario to Manitoba, south to Florida, Texas, Mexico and New Mexico. Rare near the Atlantic Coast. Wood soft, weak, creamy white; weight per cubic foot 27 lbs. Used for woodenware and paper pulp. Locally called Sugar Maple. April.

Acer Pseùdo-Plátanus L., the Sycamore Maple, with terminal drooping racemes of yellowish flowers with very woolly ovaries, and deeply 3–5-lobed leaves, and **Acer platanoides** L., the Norway Maple, with terminal corymbs of greenish yellow flowers appearing with or before the sharply 5–7-lobed leaves, are commonly planted, and occasionally escaped from cultivation in the east.

Family 68. HIPPOCASTANÀCEAE T. & G. Fl. N. A. 1: 250. 1838.

BUCKEYE FAMILY.

Trees or shrubs, with opposite petioled digitately 3–9-foliolate leaves, and conspicuous polygamous irregular flowers in terminal panicles. Calyx tubular or campanulate, 5-lobed or 5-cleft in the following genus, the lobes unequal. Petals 4–5, unequal, clawed. Disk entire, often 1-sided. Stamens 5–8; filaments elongated. Ovary sessile, 3-celled; ovules 2 in each cavity; style slender. Capsule leathery, globose or slightly 3-lobed, smooth or spiny, 3-celled or by abortion 1–2-celled, and often only 1-seeded. Seeds large, shining; cotyledons very thick.

The family consists of the following genus, containing about 15 species, natives of America and Asia, and *Billia*, of Mexico, which differs from *Æsculus* in having distinct sepals.

1. AÉSCULUS L. Sp. Pl. 344. 1753.

Characters of the family. [Ancient name.]

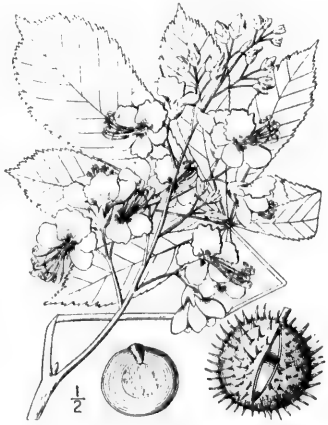
Capsule spiny, at least when young; stamens exserted.
Flowers white, mottled with yellow and purple; leaves abruptly acuminate. 1. *AE. Hippocastanum.*
Flowers yellow.
A tree; leaflets 5–7, pubescent. 2. *AE. glabra.*
A shrub; leaflets 7–9, glabrate. 3. *AE. arguta.*
Capsule glabrous; stamens not exceeding the petals.
Corolla yellow, or purplish; calyx oblong; a tree. 4. *AE. octandra.*
Corolla red; calyx tubular; a shrub. 5. *AE. Pavia.*

1. AEsculus Hippocástanum L. Horse-chestnut. (Fig. 2381.)

Æsculus Hippocastanum L. Sp. Pl. 344. 1753.

A large tree, reaching a maximum height of about 100° and a trunk diameter of 6°, the buds very resinous. Leaves long-petioled, pubescent when young, glabrate when mature, or with persistent tufts of hairs in the axils of the veins on the lower surface; leaflets 5–7 (occasionally only 3 on some leaves) obovate, 4′–8′ long, abruptly acuminate at the apex, cuneate-narrowed to the base, irregularly crenulate-dentate; flowers white, blotched with red and yellow, inflorescence rather dense, often 1° long, the pedicels and calyx canescent; stamens exserted; fruit globose, prickly.

Escaped from cultivation, southeastern New York and New Jersey. Native of Asia. Called also Bongay, and the fruit, in children's games, Conquerors. June–July.

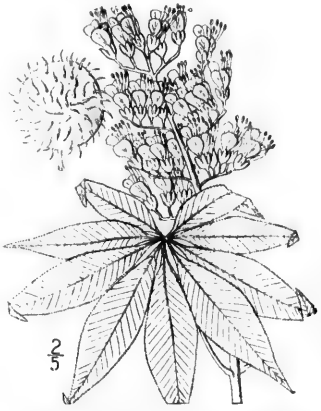


2. AEsculus glàbra Willd. Fetid Buckeye. Ohio Buckeye. (Fig. 2382.)

AEsculus glabra Willd. Enum. 405. 1809.

A tree, with maximum height of about 50° and trunk diameter of 20′, the bark rough and fetid. Leaves long-petioled; leaflets 5, rarely 7, 3′–6′ long, oval, oblong or lanceolate, acuminate, narrowed at the base, glabrous or slightly pubescent on the veins beneath, finely and sharply serrate, short-stalked or at first sessile; inflorescence loose, pubescent, 4′–6′ long; flowers pale yellow; calyx campanulate; petals 4, 5″–7″ long, slightly unequal, their claws about equalling the calyx-lobes; stamens curved, exserted; fruit 1′–1½′ in diameter, very prickly when young, becoming smoothish at maturity.

Woods, Alleghanies of Pennsylvania to Alabama, west to Michigan and the Indian Territory. Wood soft, white, the sap-wood slightly darker; weight per cubic foot 28 lbs. Timber used for artificial limbs and a variety of woodenware articles. April–May.



3. AEsculus argùta Buckl. Shrubby or Western Buckeye. (Fig. 2383.)

AE. arguta Buckl. Proc. Phil. Acad. 1860: 443. 1860.

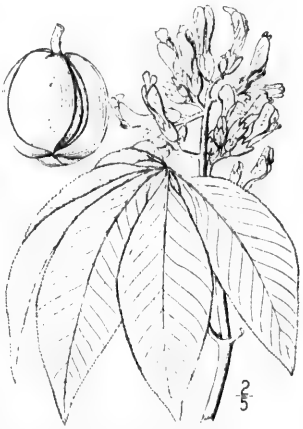
A shrub, 3°–10° high, with smooth bark. Twigs, young petioles, leaves and inflorescence somewhat pubescent, becoming glabrate; leaflets 7–9, narrow, 3′–4′ long, about 1′ wide, long-acuminate, unequally serrate; inflorescence dense, 4′–6′ long; flowers yellow, "the centre reddish;" calyx broadly campanulate, its lobes very obtuse; stamens exserted, curved; petals 5″–6″ long; fruit very spiny when young.

Kansas and the Indian Territory to Texas. Similar to the preceding species, but apparently distinct. March–April.

4. AEsculus octándra Marsh. Yellow, Sweet or Big Buckeye. (Fig. 2384.)

AEsculus octandra Marsh. Arb. Am. 4. 1785.
AEsculus lutea Wang. Schrift. Nat. Fr. Berl. 8: 133. *pl. 6.* 1788.
AEsculus flava Ait. Hort. Kew. 1: 494. 1789.

A large tree, with maximum height of 85°–90° and trunk diameter of 2½°–3°, rarely reduced to a shrub; bark dark brown, scaly. Leaves petioled, the petiole commonly slightly pubescent; leaflets 5, rarely 7, 4′–7′ long, 2′–3′ wide, oval, glabrous or pubescent on the veins above, more or less pubescent beneath, acuminate at the apex, the lower ones oblique, the others cuneate at the base, all finely serrate; inflorescence rather loose, puberulent; flowers yellow; petals 4, long clawed, connivent, the 2 upper narrower and longer than the lower; stamens included; fruit smooth even when young.

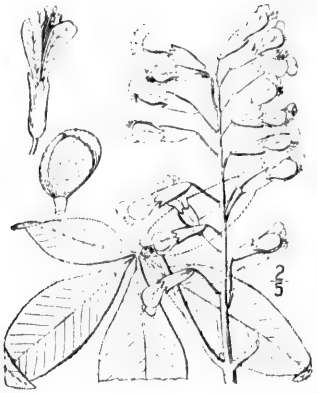


Woods, Alleghany Co., Pa., south along the mountains to Georgia, west to Iowa and Texas. Wood soft, creamy white; weight per cubic foot 27 lbs. April–May.

AEsculus octándra hýbrida (DC.) Sarg. Silva, 2: 60. 1891. PURPLISH BUCKEYE.

AEsculus hybrida DC. Cat. Hort. Monsp. 75. 1813.
AEsculus flava var. *purpurascens* A. Gray, Man. Ed. 3, 118. 1867.

Flowers purplish or pink; leaflets pubescent beneath; bark light brown. West Virginia to Georgia and Texas. Perhaps a distinct species.



5. AEsculus Pàvia L. Red Buckeye. (Fig. 2385.)

AEsculus Pavia L. Sp. Pl. 344. 1753.

A shrub, 4°–12° high. Leaflets 5–7, stalked, oblong, lanceolate, or obovate, 3′–5′ long, 1′–1½′ wide, acute or short-acuminate at the apex, all narrowed at the base, finely serrate, nearly glabrous on both sides when mature, shining; inflorescence loose; peduncles 1–3-flowered; flowers bright red-purple, 1′–1½′ long; calyx tubular, its lobes short; upper petals longer than the lower; stamens about equalling the longer petals; fruit smooth.

In rich soil, Virginia to Florida, west to Kentucky, Missouri and Arkansas. April–May.

Family 69. SAPINDÀCEAE R. Br. Exp. Congo, App. 1818.

SOAPBERRY FAMILY.

Trees or shrubs, with watery sap, rarely herbaceous vines. Leaves alternate (opposite in one exotic genus), mostly pinnate or palmate, without stipules. Flowers polygamo-dioecious, regular or slightly irregular. Sepals or calyx-lobes 4–5, mostly imbricated. Petals 3–5. Disk fleshy. Stamens 5–10 (rarely fewer or more), generally inserted on the disk. Ovary 1, 2–4-lobed or entire, 2–4-celled; ovules 1 or more in each cavity. Fruit various. Seeds globose or compressed; embryo mainly convolute; cotyledons often unequal; endosperm none.

About 120 genera, including over 1000 species, widely distributed in tropical and warm regions.

Trees or shrubs; fruit a berry. 1. *Sapindus.*
Herbaceous vines; fruit an inflated pod. 2. *Cardiospermum.*

1. SAPÍNDUS L. Sp. Pl. 367. 1753.

Trees or shrubs, with alternate mostly odd-pinnate leaves, and regular polygamo-dioecious flowers in terminal or axillary racemes or panicles. Sepals 4–5, imbricated in 2 rows. Petals of the same number, each with a scale at its base. Disk annular, hypogynous. Stamens 8–10, inserted on the disk; anthers versatile. Ovary 2–4-lobed (commonly 3-lobed), with the same number of cavities; ovules 1 in each cavity, ascending; style slender; stigma 2–4-lobed. Fruit a globose or lobed berry with 1–3 seeds. [Name, *Sapo Indicus*, Indian soap, from the soapy quality of the berries.]

About 10 species, natives of warm and tropical Asia and America. *S. Saponaria*, the only other North American species, occurs on the Florida keys.

1. Sapindus marginàtus Willd. Soapberry. Wild China-tree. (Fig. 2386.)

Sapindus marginatus Willd. Enum. 432. 1809.
Sapindus acuminatus Raf. New Flora N. A. 3: 22. 1836.

A tree, with maximum height of about 60° and trunk diameter of 18′, the bark smoothish. Leaves pinnate, glabrous on both sides, or sparingly pubescent beneath, 5′–18′ long; leaflets 7–19, inequilateral, obliquely lanceolate, often falcate, entire, 1½′–4′ long, acuminate at the apex and commonly acute at the base; rachis not winged; panicles terminal, 5′–7′ long, dense; flowers white, about 2″ broad; berry globose, or oval, 4″–6″ in diameter, very saponaceous, usually 1-seeded and with 2 abortive ovules at its base.

Kansas to Texas, Arizona and northern Mexico, east to Florida. Wood hard, light yellowish brown; weight per cubic foot 59 lbs. Used in Texas for cotton baskets. Berries used as a substitute for soap. May–June.

2. CARDIOSPÉRMUM L. Sp. Pl. 366. 1753.

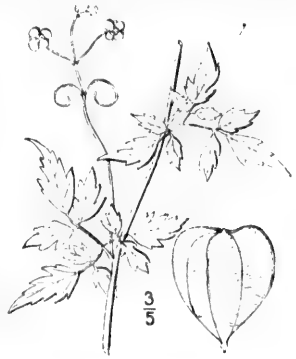
Climbing and extensively branching herbaceous vines, with alternate bipinnate or decompound leaves, and small axillary tendril-bearing corymbs of slightly irregular polygamo-dioecious flowers. Tendrils 2 to each corymb, opposite. Pedicels jointed. Sepals 4, the 2 exterior smaller. Petals 4, 2 larger and 2 smaller. Disk 1-sided, undulate. Stamens 8; filaments unequal. Ovary 3-celled; style short, 3-cleft; ovules 1 in each cavity. Capsule inflated, 3-lobed. Seeds arilled at the base; cotyledons conduplicate. [Greek, heart-seed.]

About 15 species, of warm and temperate regions.

1. Cardiospermum Halicácabum L. Balloon Vine. Heart-seed. (Fig. 2387.)

Cardiospermum Halicacabum L. Sp. Pl. 366. 1753.

Slender, glabrous or slightly pubescent, climbing, 2°–6° long. Leaves petioled, biternate or bipinnate, 2′–4′ long; segments stalked, ovate or oblong, acute or acuminate, sharply serrate; peduncles commonly longer than the leaves, bearing a few-flowered corymb at the summit and 2 coiled tendrils just beneath; flowers white, 3″–4″ broad; capsule much inflated, about 1′ long, globose-pyriform; seeds globose, nearly black.



In waste places, New Brunswick, N. J., and in ballast about the sea-ports; common in cultivation, and occasionally escaping from gardens. Native of tropical America, and widely diffused as a weed in the warmer parts of the Old World. Called also Heart-pea. Summer.

Family 70. BALSAMINÀCEAE Lindl. Nat. Syst. Ed. 2, 138. 1836.

JEWEL-WEED FAMILY.

Succulent herbs, with alternate thin simple dentate petioled leaves, and showy very irregular axillary somewhat clustered flowers. Sepals 3, the 2 lateral ones small, green, nerved, the posterior one large, petaloid, saccate, spurred. Petals 5, or 3 with 2 of them 2-cleft into dissimilar lobes. Stamens 5, short; filaments appendaged by scales on their inner side and more or less united; anthers coherent or connivent. Ovary oblong, 5-celled; style very short, or none; stigma 5-toothed or 5-lobed; ovules several in each cell. Fruit in the following genus an oblong or linear capsule, elastically dehiscent into 5 spirally coiled valves, expelling the oblong ridged seeds. Endosperm none; embryo nearly straight; cotyledons flat. Later flowers small, cleistogamous, apetalous.

About 220 species, mostly natives of tropical Asia. The family consists of the following genus and the monotypic Asiatic *Hydrocera*, differing from *Impatiens* in its indehiscent 4–5-seeded berry.

1. IMPÀTIENS L. Sp. Pl. 937. 1753.

Characters of family, as given above. [Name in allusion to the elastically bursting pods.]

Flowers orange-yellow, mottled; spur incurved. 1. *I. biflora.*
Flowers pale yellow; spur short, spreading. 2. *I. aurea.*

1. Impatiens biflòra Walt. Spotted Touch-me-not. Silver-leaf. (Fig. 2388.)

Impatiens biflora Walt. Fl. Car. 219. 1788.
Impatiens fulva Nutt. Gen. 1: 146. 1818.

Annual, glabrous, 2°–5° high, branched, purplish. Leaves thin, ovate or elliptic, pale and glaucous beneath, 1½′–3½′ long, generally obtuse, coarsely toothed, the teeth commonly mucronate; petioles slender, ½′–4′ long; peduncles axillary, ½′–1½′ long, 2–4-flowered; pedicels pendent, slender, bracted above the middle; bracts linear; flowers horizontal, orange-yellow, mottled with reddish-brown (rarely nearly white and not mottled), 9″–12″ long; saccate sepal conic, longer than broad, contracted into a slender incurved spur of one-half its length, which is 2-toothed at the apex.

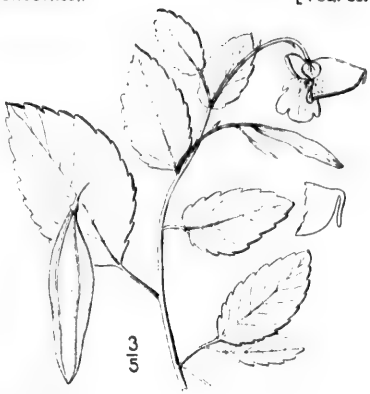
In moist grounds, Nova Scotia to Oregon and Alaska, south to Florida and Missouri. Spurs are occasionally developed on the 2 small exterior sepals, and spurless flowers have been observed. This and the next called Balsam, Jewel-weed. July–Oct.

2. Impatiens aùrea Muhl. Pale Touch-me-not. (Fig. 2389.)

Impatiens aurea Muhl. Cat. 26. 1813.
Impatiens pallida Nutt. Gen. 1: 146. 1818.

Similar to the preceding species, but larger and stouter. Flowers pale yellow, sparingly dotted with reddish-brown, or sometimes dotless, 12″–15″ long; saccate sepal dilated-conic, about as broad as long, abruptly contracted into a short scarcely incurved notched spur, less than one-third its length; bracts of the pedicels lanceolate to ovate, acute.

In similar situations, most abundant northward. Quebec to Oregon, south to Georgia and Kansas. July–Sept. This and the preceding also called Snapweed.



Family 71. **RHAMNÀCEAE** Dumort. Fl. Belg. 102. 1827.

Buckthorn Family.

Erect or climbing shrubs, or small trees, often thorny. Leaves simple, stipulate, mainly alternate, often 3–5-nerved. Stipules small, deciduous. Inflorescence commonly of axillary or terminal cymes or panicles. Flowers small, regular, perfect or polygamous. Calyx-tube obconic or cylindric, the limb 4–5-toothed. Petals 4–5, inserted on the calyx, or none. Stamens 4–5, inserted with the petals and opposite them; anthers short, versatile. Disk fleshy. Ovary sessile, free from or immersed in the disk, 2–5- (often 3-) celled; ovules 1 in each cavity, anatropous. Fruit a drupe or capsule, often 3-celled. Seeds solitary in the cavities, erect; endosperm fleshy, rarely none; embryo large; cotyledons flat.

About 45 genera and 575 species, natives of temperate and warm regions.

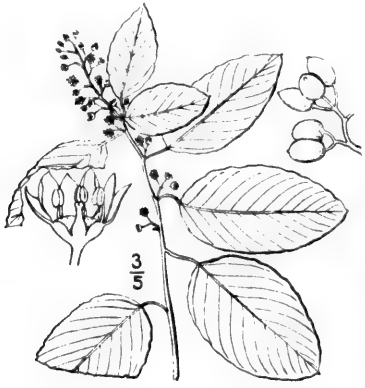
Ovary free from the disk; fruit a drupe.
- Petals sessile, entire; stone of the drupe 2-celled. — 1. *Berchemia.*
- Petals short-clawed or none; stones of the drupe 2–4. — 2. *Rhamnus.*

Ovary adnate to the disk at its base; fruit dry. — 3. *Ceanothus.*

1. **BERCHÈMIA** Neck. Elem. 2: 122. 1790.

Climbing or erect shrubs, with alternate petioled ovate or oblong coriaceous pinnately-veined leaves, and small greenish-white flowers in axillary or terminal clusters, or rarely solitary. Calyx-tube hemispheric, the limb 5-toothed. Petals 5, sessile, concave or cucullate. Stamens 5; filaments filiform. Disk filling the calyx-tube, covering but not united with the ovary. Drupe oval, obtuse, compressed, its flesh thin and coriaceous, its stone 2 celled. Seeds linear-oblong; cotyledons thin. [Name unexplained.]

About 10 species, the following in southeastern North America, the others in Asia and tropical Africa.



1. Berchemia scándens (Hill.) Trel. Supple-Jack. (Fig. 2390.)

R. scandens Hill, Hort. Kew. 453. *pl. 20.* 1768.
Berchemia volubilis DC. Prodr. 2: 22. 1825.
Berchemia scandens Trel. Trans. St. Louis Acad. 5: 364. 1889.

A glabrous high-climbing shrub, with slender tough terete branches. Leaves ovate or ovate-oblong, 1′–2′ long, ½′–1′ wide, acute, acuminate, or obtuse and cuspidate at the apex, obtuse or somewhat truncate at the base, dark green above, paler beneath, their margins undulate and sometimes slightly revolute; veins 8–12 pairs; petioles slender, 2″–5″ long; flowers about 1½″ broad, mainly in small terminal panicles; petals acute; style short; drupe 3″–4″ long, equalling or shorter than its slender pedicel, its stone crustaceous.

In low woods, Virginia to Florida, Kentucky, Missouri and Texas. March–June.

2. RHÁMNUS L. Sp. Pl. 193. 1753.

Shrubs or small trees, with alternate pinnately veined and (in our species) deciduous leaves, and small axillary cymose racemose or paniculate, perfect or polygamous flowers. Calyx-tube urceolate, its limb 4–5-toothed. Petals 4–5, short-clawed, mainly emarginate and hooded, or none. Disk free from the 3–4-celled ovary. Style 3–4-cleft. Drupe berry-like, oblong or globose, containing 2–4 separate nutlet-like stones. Seeds mainly obovoid; endosperm fleshy; cotyledons flat or revolute. [The ancient Greek name.]

About 75 species, natives of temperate and warm regions. Besides the following, some 6 others occur in the western United States and British America.

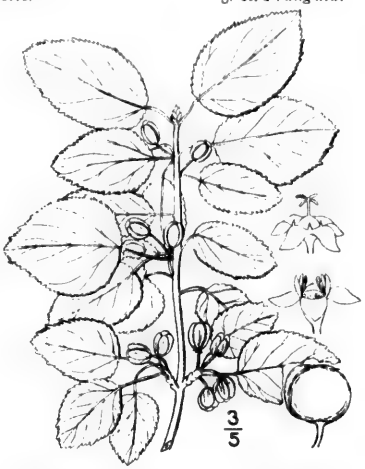
Flowers dioecious or polygamous; nutlets grooved.
- Petals present; flowers mainly 4-merous.
  - Leaves broadly ovate; branches thorny; drupe with 3–4 nutlets. — 1. *R. cathartica.*
  - Leaves ovate-lanceolate; drupe with 2 nutlets. — 2. *R. lanceolata.*
- Petals none; flowers 5-merous; drupe with 3 nutlets. — 3. *R. alnifolia.*

Flowers perfect; nutlets smooth.
- Umbels peduncled; leaves acute; calyx campanulate. — 4. *R. Caroliniana.*
- Umbels sessile; leaves obtuse; calyx hemispheric. — 5. *R. Frangula.*

1. Rhamnus cathàrtica L. Buckthorn. (Fig. 2391.)

Rhamnus cathartica L. Sp. Pl. 193. 1753.

A shrub, 6°–20° high, the twigs often ending in stout thorns. Leaves glabrous, petioled, broadly ovate or elliptic, 1½′–2½′ long, about 1′ wide, regularly crenate or crenulate, acute, obtuse or acuminate at the apex, obtuse or acutish at the base, with 3–4 pairs of veins, the upper running nearly to the apex; flowers dioecious, greenish, about 1″ wide, clustered in the axils, unfolding a little later than the leaves; petals, stamens and calyx-teeth 4; petals very narrow; drupe globose, black, about 4″ in diameter; nutlets 3–4, grooved.



In dry soil, escaped from hedges, New England, the Middle States and Ontario. Introduced from Europe and native also of northern Asia. May–June. Called also Hart's-thorn, Rhineberry, and Waythorn. The berries yield a dye, and have powerful medicinal properties.

2. Rhamnus lanceolàta Pursh. Lance-leaved Buckthorn. (Fig. 2392.)

Rhamnus lanceolata Pursh, Fl. Am. Sept. 166. 1814.

A tall erect shrub, with smooth grayish bark, and unarmed mostly puberulent branches. Leaves short-petioled, 1′–3½′ long, ½′–1′ wide, ovate-lanceolate, obtusish or acuminate at the apex, acute or obtuse at the base, glabrous or nearly so above, more or less pubescent, especially on the veins beneath, finely serrulate; veins 6–7 pairs; flowers axillary, 2–3 together, greenish, about 1¼″ broad, mostly dioecious, appearing with the leaves; pedicels 1″–2″ long; petals, stamens and calyx-teeth 4; drupe black, about 3″ in diameter, obovoid-globose; stigmas 2; drupe containing 2 grooved nutlets.

In moist soil, Pennsylvania to Iowa and Nebraska, south to Alabama and Texas. May.

3. Rhamnus alnifòlia L'Her. Alder-leaved Buckthorn. Dwarf Alder. (Fig. 2393.)

Rhamnus alnifolia L'Her. Sert. Angl. 5. 1788.

A small shrub, with puberulent thornless branches. Leaves oval to elliptic, 2′–4′ long, 1′–2′ wide, obtuse to acuminate at the apex, mainly acute at the base, irregularly crenate-serrate; veins 6–7 pairs; petioles 3″–6″ long; flowers 5-merous, solitary or 2–3 together in the axils, green, about 1½″ broad, mainly dioecious, appearing with the leaves; petals none; fruiting pedicels 3″–4″ long; drupe globose, or somewhat obovoid, about 3″ in diameter; nutlets 3, grooved.

In swamps, New Brunswick to British Columbia, south to New Jersey, Illinois, Nebraska, Montana and California. May–June.

4. Rhamnus Caroliniàna Walt. Carolina Buckthorn. (Fig. 2394.)

Rhamnus Caroliniana Walt. Fl. Car. 101. 1788.
Frangula Caroliniana A. Gray, Gen. 2: 178. 1849.

A tall thornless shrub, or small tree, with puberulent twigs. Leaves elliptic, or broadly oblong, glabrous, or somewhat hairy on the veins beneath, 2′–6′ long, 1′–2½′ wide, acute or acuminate at the apex, obtuse or acute at the base, obscurely serrulate or even entire; veins 6–10 pairs; petioles 6″–9″ long; flowers 5-merous, perfect, greenish, about 1″ broad, in axillary peduncled umbels, or some of them solitary, unfolding after the leaves; calyx finely puberulent, or glabrous, campanulate, its lobes lanceolate, acuminate; petals present; drupe globose, sweet, about 4″ in diameter; nutlets 3, not grooved.

In swamps and low grounds, Virginia and Kentucky, west to Kansas, south to Florida and Texas. May–June.

5. Rhamnus Frángula L. Alder Buckthorn. (Fig. 2395.)

Rhamnus Frangula L. Sp. Pl. 193. 1753.

A shrub, reaching a maximum height of about 8°, the young twigs finely and sparsely puberulent. Leaves thin, elliptic or obovate, entire or very obscurely crenulate, glabrous on both surfaces, obtuse or cuspidate at the apex, rounded or narrowed at the base, 1½′–2½′ long, 1′–1½′ wide; petioles 2″–4″ long; umbels 1–6-flowered, strictly sessile in the axils; flowers 5-merous, perfect; calyx nearly hemispheric, its lobes ovate, acute; fruiting pedicels 2″–5″ long; fruit 3″–4″ in diameter, the 3 nutlets compressed, not grooved.

In bogs, Long Island and northern New Jersey. Naturalized from Europe. May–June. Called also Black-alder, Berry-alder and Arrow-wood.

3. CEANÒTHUS L. Sp. Pl. 195. 1753.

Shrubs, with alternate petioled leaves, and terminal or axillary cymose panicles of white blue or yellowish perfect flowers. Calyx-tube hemispheric, or top-shaped, the limb 5-lobed. Petals 5, hooded, clawed, longer than the calyx-lobes, inserted under the disk. Stamens 5; filaments filiform, elongated. Ovary immersed in the disk and adnate to it at the base, 3 lobed. Disk adnate to the calyx. Style short, 3-cleft. Fruit dry, 3-lobed, separating longitudinally at maturity into 3 nutlets. Seed-coat smooth; endosperm fleshy; cotyledons oval or obovate. [Name used by Theophrastus for some different plant.]

About 35 species, natives of North America and northern Mexico.

Leaves ovate or ovate-oblong, pubescent. 1. *C. Americanus.*
Leaves oblong or oval-lanceolate, glabrate. 2. *C. ovatus.*

1. Ceanothus Americànus L. New Jersey Tea. Red-root. (Fig. 2396.)

Ceanothus Americanus L. Sp. Pl. 195. 1753.

Stems erect or ascending, branching, several commonly together from a deep reddish root, puberulent, especially above. Leaves ovate or ovate-oblong, 1′–3′ long, ½′–1′ wide, acute or acuminate at the apex, obtuse or subcordate at the base, finely pubescent, especially beneath, serrate all around, strongly 3-nerved; petioles 2″–5″ long; peduncles terminal and axillary, elongated, often leafy bearing dense oblong cymose panicles of small white flowers; pedicels 3″–6″ long, white; claws of the petals very narrow; fruit depressed, about 2″ high, nearly black.

In dry open woods, Ontario to Manitoba, south to Florida and Texas. May–July. Ascends to 4200 ft. in North Carolina. An infusion of the leaves was used as tea by the American troops during the Revolution. Also called Wild Snowball.

2. Ceanothus ovàtus Desf. Smaller Red-root. (Fig. 2397.)

Ceanothus ovatus Desf. Hist. Arb. 2: 381. 1809.
Ceanothus ovalis Bigel. Fl. Bost. Ed. 2: 92. 1824.

Similar to the preceding species, but generally a smaller shrub and nearly glabrous throughout. Leaves oblong, or oval-lanceolate, 1′–2′ long, 3″–9″ wide, mainly obtuse at each end, but sometimes acute at the apex, glabrous, or with a few hairs on the principal veins, serrate with prominently gland-tipped teeth; peduncles short, nearly always terminal, bearing dense short cymose panicles of white flowers; pedicels slender, 4″–7″ long; fruit nearly as in *C. Americanus.*

In rocky places and on prairies, Ontario to Minnesota and the Black Hills, south to Massachusetts, Illinois and Texas. Rare or absent along the Atlantic coast. May–June.

Ceanothus ovàtus pubéscens T. & G.; S. Wats. Bibl. Index, 1: 166. 1878.
Leaves, petioles and peduncles densely pubescent. Iowa to Arkansas and Texas.

Family 72. VITÀCEAE Lindl. Nat. Syst. Ed. 2, 30. 1836.

GRAPE FAMILY.

Climbing or erect shrubs, with copious watery sap, nodose joints, alternate petioled leaves, and small regular greenish perfect or polygamo-dioecious flowers, in panicles, racemes or cymes. Calyx entire or 4–5-toothed. Petals 4–5,

separate or coherent, valvate, caducous. Stamens 4–5, opposite the petals; filaments subulate, inserted at the base of the disk or between its lobes; disk sometimes obsolete or wanting; anthers 2-celled. Ovary 1, generally immersed in the disk, 2–6-celled; ovules 1–2 in each cavity, ascending, anatropous. Fruit a 1–6-celled berry (commonly 2-celled). Seeds erect; testa bony; raphe generally distinct; endosperm cartilaginous; embryo short.

About 10 genera and 450 species, widely distributed.

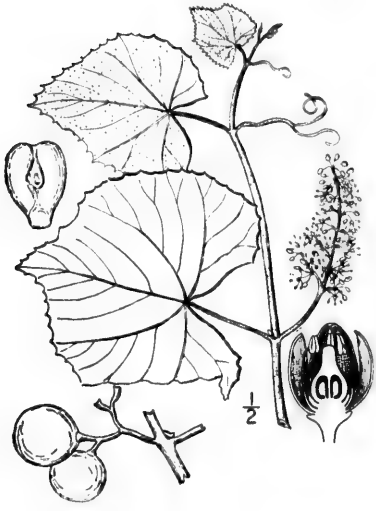
Hypogynous disk present, annular or cup-shaped, lobed or glandular; leaves not digitately compound in our species.
  Petals united into a cap, falling away without separating. 1. *Vitis.*
  Petals separate, spreading. 2. *Ampelopsis.*
Hypogynous disk obsolete or wanting; leaves digitately compound in our species, the leaflets 5–7. 3. *Parthenocissus.*

1. VITIS L. Sp. Pl. 202. 1753.

Climbing or trailing woody vines, rarely shrubby, mostly with tendrils. Leaves simple, usually palmately lobed or dentate. Stipules mainly small, caducous. Flowers mostly dioecious, or polygamo-dioecious, rarely perfect. Petals hypogynous or perigynous, coherent in a cap and deciduous without expanding. Ovary 2-celled, rarely 3–4-celled; style very short, conic; ovules 2 in each cavity. Berry globose or ovoid, few-seeded, pulpy, edible in most species. [The ancient Latin name.]

About 40 species, natives of warm and temperate regions. In addition to the following, some 10 or 15 others occur in the southern and western United States.

Leaves woolly beneath.
  Pubescence rusty-brown; berries large, musky. 1. *V. Labrusca.*
  Pubescence at length whitish; berries small, black, not musky.
    Berries with bloom; branches terete. 2. *V. aestivalis.*
    Berries without bloom; branches angular. 3. *V. cinerea.*
Leaves glabrate, sometimes slightly pubescent when young.
  Leaves bluish-white glaucous beneath. 4. *V. bicolor.*
  Leaves not glaucous beneath.
    Leaves 3–7-lobed; lobes acute or acuminate.
      Lobes and sinuses acute; berries with bloom. 5. *V. vulpina.*
      Lobes long-acuminate; sinuses rounded; berries without bloom. 6. *V. palmata.*
    Leaves sharply dentate, scarcely lobed.
      Bark loose; pith interrupted by the solid nodes.
        High-climbing; leaves large; berries sour.
          Leaves somewhat shining above, the apex long-acuminate; inflorescence loose. 7. *V. cordifolia.*
          Leaves dull, the apex short-acuminate or blunt; inflorescence compact. 8. *V. Baileyana.*
        Low; leaves small; berries sweet. 9. *V. rupestris.*
      Bark close; pith continuous through the nodes. 10. *V. rotundifolia.*



1. Vitis Labrúsca L. Northern Fox- or Plum-grape. Wild Vine. (Fig. 2398.)

Vitis Labrusca L. Sp. Pl. 203. 1753.

Climbing or trailing, often ascending high trees, sometimes forming a stem a foot in diameter or more, the young twigs, forked tendrils, petioles and lower surfaces of the leaves densely rusty-pubescent, especially when young. Bark loose and separating in strips; nodes solid, interrupting the pith; leaves large, each opposite a tendril or a flower cluster, varying from merely dentate to deeply lobed with rounded sinuses; fertile flowers in compact panicles, the sterile looser; berries few, brownish-purple, about 9″ in diameter, strongly musky; seeds 3–6, about 4″ long; raphe narrow.

Thickets, New England to Minnesota, Georgia and Tennessee. The cultivated Isabella, Concord and Catawba grapes have been derived from this species. Ascends to 2100 ft. in Virginia. May–June. Fruit ripe Aug.–Sept.

2. Vitis aestivàlis Michx. Summer Grape. Small Grape. (Fig. 2399.)

Vitis aestivalis Michx. Fl. Bor. Am. 2: 230. 1803.

High climbing, branches terete, the twigs and petioles glabrous or pubescent; bark loose and shreddy; pith interrupted at the nodes. Leaves as large as those of *V. Labrusca*, dentate, or 3–5-lobed, floccose-woolly with whitish or rusty pubescence, especially when young, sometimes becoming nearly glabrous when mature; tendrils and flower-clusters intermittent (wanting opposite each third leaf); inflorescence generally long and loose; berries numerous, about 5″ in diameter, black, with a bloom, acid, but edible; seeds 2–3, about 3″ long; raphe narrow.

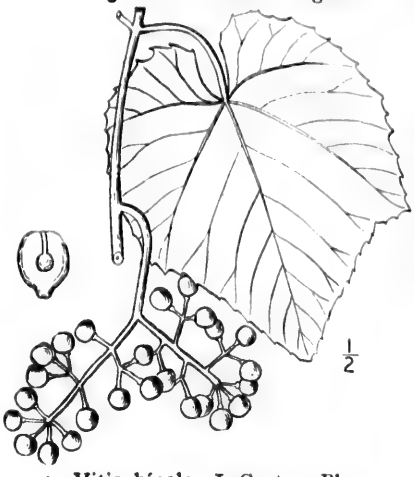
In thickets, southern New England to Florida, west to southern Ontario, Wisconsin and Louisiana. Ascends to 3500 ft. in North Carolina. May–June. Fruit ripe Sept.–Oct.

3. Vitis cinèrea Engelm. Downy Grape. (Fig. 2400.)

Vitis aestivalis var. *canescens* Engelm. Am. Nat. 2: 321, name only. 1868.
Vitis aestivalis var. *cinerea* Engelm.; A. Gray, Man. Ed. 5, 679. 1867.
V. cinerea Engelm. Bushb. Cat. Ed. 3, 17. 1883.

Climbing, branches angled, young shoots and petioles mostly floccose-pubescent; bark loose; pith interrupted; tendrils intermittent. Leaves dentate, or somewhat 3-lobed, often longer than wide, rather densely floccose-pubescent with whitish, persistent hairs on the lower surface, especially along the veins, sparingly so on the upper; inflorescence loose; berries black, without bloom, 3″–4″ in diameter, pleasantly acid, 1–2-seeded; seeds about 2″ long, the raphe narrow.

Illinois to Nebraska, Kansas and Texas, east to Florida (according to T. V. Munson.)

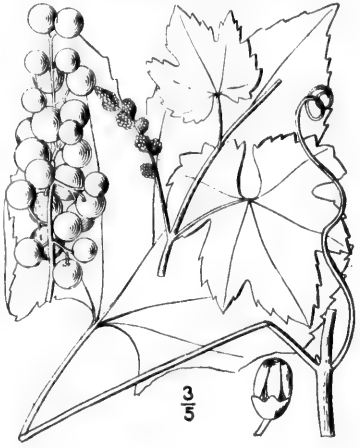


4. Vitis bícolor LeConte. Blue or Winter Grape. (Fig. 2401.)

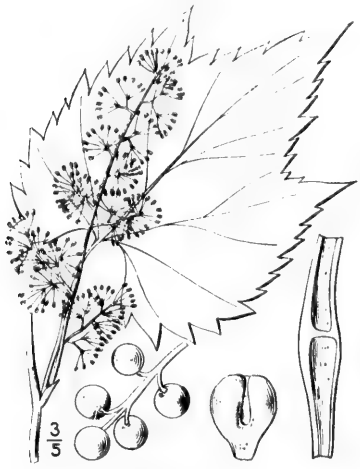
Vitis bicolor LeConte, Proc. Phil. Acad. 6: 272. 1852.
Vitis aestivalis var. *bicolor* LeConte; Wats. & Coult. in A. Gray, Man. Ed. 6, 113. 1890.

High-climbing or long-trailing, the tendrils intermittent, the branches terete. Twigs and leaves glabrous, or somewhat pubescent, bluish-glaucous, especially the lower surfaces of the leaves, the bloom sometimes disappearing by the time the fruit ripens; internodes long, the pith interrupted at the nodes; leaves usually 3-lobed, cordate at the base, sometimes 12′ long, the sinuses rounded, the lobes acute or acuminate; inflorescence compact; berries bluish-black with a bloom, sour, about 4″ in diameter; seeds about 2″ long, raphe narrow.

Northern New York to Michigan and North Carolina.



5. Vitis vulpina L. Riverside or Sweet Scented Grape. (Fig. 2402.)

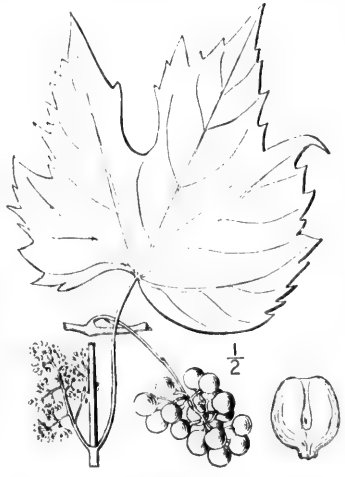


Vitis vulpina L. Sp. Pl. 203. 1753.
Vitis riparia Michx. Fl. Bor. Am. 2: 231. 1803.
Vitis cordifolia var. *riparia* A. Gray, Man. Ed. 5, 113. 1867.

Climbing or trailing, glabrous throughout, or more or less pubescent on the veins of the lower surfaces of the leaves; branches rounded or slightly angled, greenish; pith interrupted, the diaphragm thin; tendrils intermittent. Leaves shining, almost all sharply 3–7-lobed, the sinuses angular, the lobes acute or acuminate, the terminal one commonly long; stipules 2″–3″ long, often persistent until the fruit is formed; inflorescence compact or becoming loose; berries bluish-black, with a bloom, 4″–5″ in diameter, rather sweet; seeds 2–4, 2″ long, the raphe narrow and inconspicuous.

Along rocky river-banks, Nova Scotia to Manitoba, south to Maryland and Arkansas. May–June. Fruit beginning to ripen in July, sometimes continuing until October. Leaves light green, thin.

6. Vitis palmàta Vahl. Missouri Grape. (Fig. 2403.)

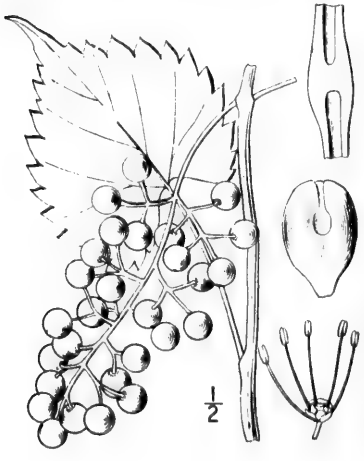


Vitis palmata Vahl, Symbol. Bot. 3: 42. 1794.

High-climbing, glabrous or nearly so throughout, or with slight pubescence on the veins of the lower surfaces of the leaves; twigs bright red; bark separating in large flakes; pith interrupted, the diaphragms thick; tendrils intermittent, forked. Leaves dull, darker green than in *V. vulpina*, deeply 3–5-lobed, the sinuses rounded, the lobes long-acuminate; stipules 1½″–2″ long; inflorescence loose; berries black, 4″–5″ in diameter, without bloom; seeds 1–2, about 3″ long; raphe indistinct.

River-banks, Illinois and Missouri. Blooming later and ripening its berries after *V. vulpina*. June–July.

7. Vitis cordifòlia Michx. Frost Grape. Chicken Grape. (Fig. 2404.)



Vitis cordifolia Michx. Fl. Bor. Am. 2: 231. 1803.

High-climbing, the twigs glabrous or slightly pubescent, terete or indistinctly angled; pith interrupted by thick diaphragms; internodes long; bark loose; tendrils intermittent; stem sometimes 1° in diameter or more. Leaves 3′–4′ wide, shining above, glabrous or sparingly pubescent beneath, thin, sharply and coarsely dentate with very acute teeth, sometimes slightly 3-lobed, mostly long-acuminate at the apex; tendrils forked, intermittent; stipules about 2″ long; inflorescence loose; berries black, shining, about 3″ in diameter, ripening after frost; seeds 1 or 2, about 2″ long; raphe narrow or inconspicuous.

Moist thickets and along streams, New England to Nebraska, south to Florida and Texas. Called also Possum Grape and Winter Grape. May–June. Fruit ripe Oct.–Nov.

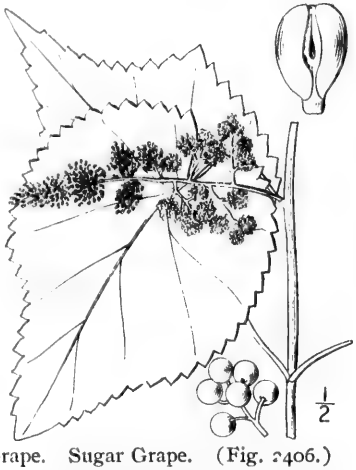
8. Vitis Baileyàna Munson. Bailey's Grape. (Fig. 2405.)

Vitis Virginiana Munson, Gard. & For. 3: 474. 1890. Not Lam. 1808.

Vitis Baileyana Munson. Vit. Bail. 1893.

Climbing, but often low, the branches distinctly angled, the young twigs tomentose, the tendrils intermittent; pith interrupted at the nodes; internodes short. Leaves crenate-dentate, sometimes slightly 3-lobed, as a rule smaller than those of *V. cordifolia*, somewhat pubescent on the veins beneath even when old; the apex short-acuminate, acute, or blunt, the teeth mucronate; inflorescence compact; berries black, 4″–5″ in diameter, sweet; seeds about 2″ long, the raphe broad.

In valleys, southwestern Virginia, West Virginia and North Carolina.

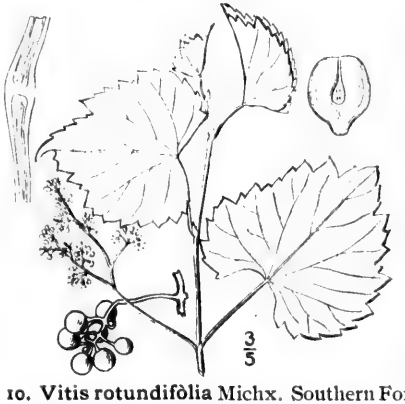


9. Vitis rupéstris Scheele. Sand Grape. Sugar Grape. (Fig. 2406.)

V. rupestris Scheele, Linnaea, 21 591. 1848.

Low, bushy or sometimes climbing to a height of several feet, glabrous or somewhat floccose-pubescent on the younger parts; pith interrupted; bark loose; tendrils forked, intermittent or often wanting. Leaves smaller than in any of the preceding species, pale green, shining, sharply dentate with coarse teeth, abruptly pointed, rarely slightly 3-lobed, the sides often folded together; stipules 2″–3″ long; inflorescence compact; berries black, with a bloom, 3″–4″ in diameter, sweet, 2–4-seeded; seeds about 2″ long; raphe very slender.

In various situations, southern Pennsylvania to Missouri, Tennessee and Texas. April–June. Fruit ripe in August.



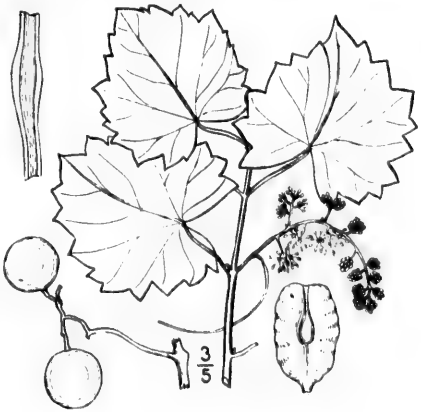
10. Vitis rotundifòlia Michx. Southern Fox-grape. Bullace Grape. (Fig. 2407.)

Vitis rotundifolia Michx. Fl. Bor. Am. 2: 231. 1803.

Vitis vulpina T. & G. Fl. N. A. 1: 245. 1838. Not L. 1753.

Trailing or high-climbing, glabrous or nearly so throughout; tendrils simple, intermittent, sometimes few; bark close, not shreddy; pith continuous through the nodes. Leaves nearly orbicular, 2′–3′ wide, dark green, shining, dentate with large triangular teeth; inflorescence dense; berries few, purple, 5″–9″ in diameter, without bloom, tough, musky; seeds several, flat, wrinkled, notched at the apex; raphe indistinct.

In moist, often sandy soil, Maryland to Kansas, south to Florida, Texas and Mexico. Muscadine Grape. The original of the Scuppernong. The berries fall away singly. May. Fruit ripe Aug.–Sept.



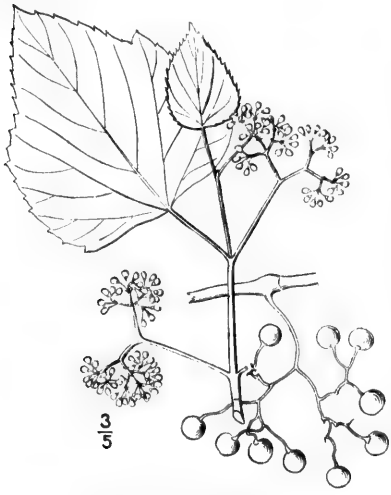
2. AMPELÓPSIS Michx. Fl. Bor. Am. 1: 159. 1803.

[CISSUS Pers. Syn. 1: 143. 1805. Not L. 1753.]

Climbing woody vines, or some species bushy, the coiling tendrils not tipped by adhering expansions. Leaves simple, dentate or lobed, or pinnately or palmately compound. Flowers polygamo-dioecious, or polygamo-monoecious. Petals 5, separate, spreading. Disk cup-shaped, 5-lobed or annular, adnate to the base of the ovary; ovary 2-celled; ovules 2 in each cavity; style subulate. Berry 2–4-seeded, the flesh usually thin and inedible. [Greek, Vine-like.]

About 15 species, natives of temperate and warm regions, only the following known to occur in North America.

Leaves coarsely serrate, or slightly 3-lobed. 1. *A. cordata.*
Leaves 2–3-pinnately compound. 2. *A. arborea.*



1. Ampelopsis cordàta Michx. Simple-leaved Ampelopsis. (Fig. 2408.)

Ampelopsis cordata Michx. Fl. Bor. Am. 1: 159. 1803.
Cissus Ampelopsis Pers. Syn. 1: 142. 1805.
Vitis indivisa Willd. Berl. Baumz. Ed. 2, 538. 1811.

Glabrous or the young twigs sparingly pubescent, climbing, the branches nearly terete; tendrils few or none. Leaves broadly ovate, 2′–4′ long, coarsely serrate, rarely slightly 3-lobed, glabrous on both sides, or pubescent along the veins, truncate or cordate at the base, acuminate at the apex; panicles small, loose, with 2–3 main branches; corolla expanding its petals; disk cup-shaped; berries 2″–3″ in diameter, bluish, 1–2-seeded, the flesh very thin and inedible; seeds about 2″ long; raphe narrow.

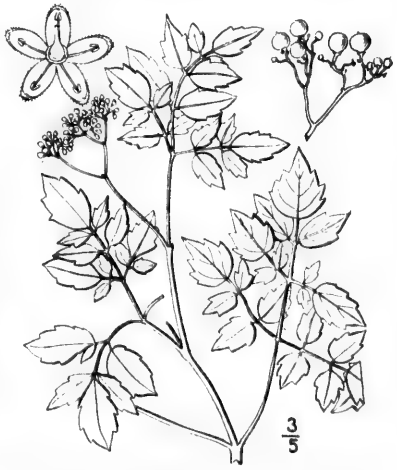
Swamps and river-banks, southern Virginia to Florida, west to Illinois, Kansas and Texas. May-June.

2. Ampelopsis arbòrea (L.) Rusby. Pepper-vine. Pinnate-leaved Ampelopsis. (Fig. 2409.)

Vitis arborea L. Sp. Pl. 203. 1753.
Cissus stans Pers. Syn. 1: 143. 1805.
Vitis bipinnata T. & G. Fl. N. A. 1: 243. 1838.
Ampelopsis arborea Rusby, Mem. Torr. Club, 5: 221. 1894.

Glabrous or nearly so, erect or ascending, bushy, scarcely climbing; tendrils often wanting. Leaves bipinnate, or the lowest tripinnate and sometimes 8′ in length or more; leaflets ovate or rhombic-ovate, ½′–1½′ long, sharply serrate, acute or acuminate at the apex, obtuse or slightly cordate or the terminal one cuneate at the base, glabrous, or somewhat pubescent on the veins beneath; panicles short-cymose; corolla expanding; berries black, depressed-globose, about 3″ in diameter, sometimes pubescent, the flesh thin, inedible; seeds 1–3.

In rich moist soil, Virginia to Missouri, Florida and Mexico. Also in Cuba. June–July.



Ampelopsis heterophýlla (Thunb.) Sieb. & Zucc., a climbing eastern Asiatic vine, with deeply palmately 3–5-lobed leaves and short-peduncled compound cymes, was found as a waif from cultivation at Lancaster, Pa., in 1890.

3. **PARTHENOCÍSSUS** Planch. in DC. Mon. Phan. 5: Part 2, 447. 1887.

[QUINARIA Raf. Am. Man. Grape-vines, 6. 1830. Not Lour. 1790.]

Climbing or trailing woody vines, the tendrils often tipped with adhering expansions (disks), or sometimes merely coiling, our species with digitately compound leaves, the leaflets 5–7. Flowers perfect, or polygamo-monoecious, in compound cymes or panicles. Petals 5, spreading. Hypogynous disk obsolete or wanting in our species. Stamens 5. Ovary 2-celled; ovules 2 in each cavity; style short, thick. Berry 1–4-seeded, the flesh thin, not edible.

About 10 species, natives of eastern North America and Asia. Besides the following, another occurs in Texas.

1. **Parthenocissus quinquefòlia** (L.) Planch. Virginia Creeper. False Grape. American Ivy. (Fig. 2410.)

Hedera quinquefolia L. Sp. Pl. 202. 1753.
Vitis quinquefolia Lam. Tabl. Encycl. 2: 135. 1793.
Ampelopsis quinquefolia Michx. Fl. Bor. Am. 1: 160. 1803.
Parthenocissus quinquefolia Planch. in DC. Mon. Phan. 5: Part 2, 448. 1887.

High-climbing or trailing. Tendrils usually numerous, and provided with terminal adhering expansions, the vine sometimes supported also by aerial roots; leaves petioled, digitately 5-foliolate (rarely 7-foliolate); leaflets stalked, oval, elliptic, or oblong-lanceolate; 2′–6′ long, acute or acuminate, narrowed at the base, coarsely toothed, at least above the middle, pale beneath, dark green above, glabrous or somewhat pubescent; panicles ample, erect or spreading in fruit; berries blue, about 6″ in diameter, usually 2–3-seeded; peduncles and pedicels red.

In woods and thickets, Quebec to Manitoba, Florida, Texas and Mexico. Also in Cuba. July. Fruit ripe in October. The foliage turns deep red in autumn. Erroneously called Woodbine.

Parthenocissus quinquefòlia laciniàta Planch. in DC. Mon. Phan. 5: Part 2, 449. 1887.
Ampelopsis quinquefolia var. *vitacea* Knerr, Bot. Gaz. 18: 71. 1893.
Parthenocissus vitacea A. S. Hitchcock, Spring Fl. Manhattan, 26. 1894.

Tendrils mostly without terminal adhering disks, the vine not high-climbing; leaves more deeply and sharply toothed; fruiting panicles described as drooping. Ohio to Iowa, Kansas and Colorado. Perhaps specifically distinct.

Parthenocissus tricuspidàta (Sieb. & Zucc.) Planch., the *Ampelopsis Veitchii* of the gardeners, a Japanese vine, clinging to walls by its very numerous disk-tipped tendrils, has the leaves sharply 3-lobed or sometimes 3-divided; it is freely planted for ornament.

Family 73. **TILIÀCEAE** Juss. Gen. 289. 1789.

LINDEN FAMILY.

Trees, shrubs or rarely herbs, with alternate (rarely opposite) simple leaves, mostly small and deciduous stipules, and axillary or terminal generally cymose or paniculate flowers. Sepals 5, rarely 3–4, valvate, deciduous. Petals of the same number, or fewer, or none, alternate with the sepals, mostly imbricated in the bud. Stamens ∞, mostly 5–10-adelphous; anthers 2-celled. Ovary 1, sessile, 2–10-celled; style entire or lobed; ovules anatropous. Fruit 1–10-celled, drupaceous or baccate. Embryo straight, rarely curved; cotyledons ovate or orbicular; endosperm fleshy, rarely wanting.

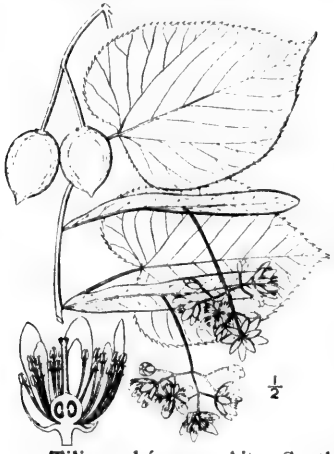
About 35 genera and 245 species, widely distributed in warm and tropical regions, a few in the temperate zones.

1. **TÍLIA** L. Sp. Pl. 514. 1753.

Trees, with serrate cordate mainly inequilateral leaves, and axillary or terminal, cymose white or yellowish perfect flowers, the peduncles subtended by and partly adnate to broad membranous bracts. Sepals 5. Petals 5, spatulate, often with small scales at the base. Stamens ∞; filaments cohering with the petal-scales or with each other in 5 sets. Ovary 5-celled; cells 2-ovuled; style simple; stigma 5-toothed. Fruit dry, drupaceous, globose or ovoid, indehiscent, 1–2-seeded. Seeds ascending; endosperm hard; cotyledons broad, 5-lobed, corrugated. [The ancient Latin name.]

About 12 species, natives of the north temperate zone, 1 in the mountains of Mexico.

Leaves glabrous or nearly so on both surfaces. 1. *T. Americana.*
Leaves glabrous above, pubescent beneath. 2. *T. pubescens.*
Leaves glabrous above, silvery-white beneath. 3. *T. heterophylla.*



1. Tilia Americàna L. Bass-wood. American Linden. White-wood. (Fig. 2411.)

Tilia Americana L. Sp. Pl. 514. 1753.
T. glabra Vent. Mem. Acad. Paris, **4**: 9. *pl. 2.* 1802.
Tilia Canadensis Michx. Fl. Bor. Am. **2**: 306. 1803.

A large forest tree, 60°–125° high, with spreading branches; trunk 2°–5° in diameter. Leaves obliquely ovate, cordate or sometimes truncate at the base, 2′–5′ wide, coriaceous, glabrous on both sides, or with some pubescence on the veins of the lower surface, sharply serrate with glandular teeth, abruptly acuminate or acute; petioles 1′–2′ long; floral bract 2′–4′ long, often narrowed at the base, strongly veined; cymes drooping, 6–20-flowered; flowers 5″–7″ broad, fragrant; petals yellowish-white, crenate, slightly longer than the pubescent sepals; scales similar to the petals, but smaller; fruit globose-ovoid, 4″–5″ in diameter.

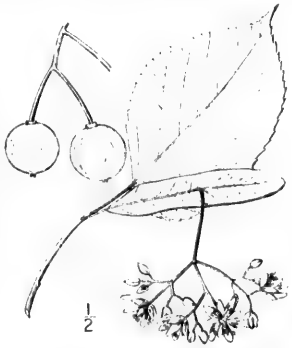
In rich woods and along river-bottoms, New Brunswick to Georgia, especially along the mountains, west to Manitoba, Nebraska and Texas. Wood soft, weak, light brown or reddish; weight per cubic foot 28 lbs. Used for cabinet work and for paper pulp. Called also Whistle-wood. May–June.

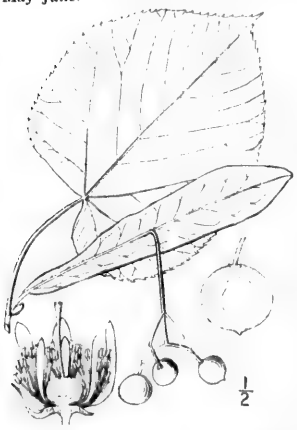
2. Tilia pubéscens Ait. Southern Bass-wood or White-wood. (Fig. 2412.)

Tilia pubescens Ait. Hort. Kew. **2**: 229. 1789.
Tilia Americana var. *pubescens* Loud. Arb. Brit. **1**: 374. 1838.
Tilia Americana var. *Walteri* Wood, Bot. & Flor. 64. 1870.

A small tree, 40°–50° high, with a trunk 1° in diameter. Leaves generally smaller than those of *T. Americana*, glabrous above, pubescent, or sometimes densely woolly beneath; floral bracts commonly broader and shorter, narrowed or rounded at the base; fruit globose, 2½″–3″ in diameter.

In moist woods, Long Island to Florida, west to Texas, mostly along the coast. Wood as in *T. Americana*, but lighter in weight, about 24 lbs. to the cubic foot. May–June.





3. Tilia heterophýlla Vent. White Bass-wood. Bee-tree. (Fig. 2413.)

Tilia heterophylla Vent. Mem. Acad. Paris, **4**: 16. *pl. 5.* 1802.
Tilia alba Michx. f. Hist. Arb. Am. **3**: 315. *pl. 2.* 1813. Not Waldst. & Kitt.
Tilia heterophylla var. *alba* Wood. Bot. & Flor. 64. 1870.

A forest tree, 45°–70° high, with a trunk 1½°–3½° in diameter. Leaves larger than in either of the preceding species (often 6′–8′ long), inequilateral, cordate or truncate, glabrous and dark green above, white beneath with a fine downy pubescence, acute or acuminate; floral bracts 3′–5′ long, narrowed at the base; flowers slightly larger and often fewer than those of *T. Americana*; fruit globose, about 5″ in diameter.

In woods, mountains of southern Pennsylvania, south along the Alleghanies and Blue Ridge to Florida and Alabama, west to central Illinois, Kentucky and Tennessee. Also called Wahoo. Wood weak, light brown; weight per cubic foot 26 lbs. June–July.

The European Linden, or Lime Tree, **Tilia Europaèa** L., is planted as an ornamental tree in parks and on lawns. It may be distinguished from any of our species by the absence of scales at the base of the petals. Its name, Lin, was the origin of the family name of Linnaeus.

Family 74. **MALVÀCEAE** Neck. Act. Acad. Theod. 2: 488. 1770.

MALLOW FAMILY.

Herbs or shrubs (sometimes trees in tropical regions), with alternate mostly palmately-veined leaves. Stipules small, deciduous. Flowers regular, perfect, often large, rarely dioecious or polygamous. Sepals 5 (rarely 3 or 4), more or less united, usually valvate; calyx often bracted at the base. Petals 5, hypogynous, convolute, often contorted. Stamens ∞, hypogynous, monadelphous, forming a central column around the pistil, united with the bases of the petals; anthers 1-celled. Ovary several-celled, entire or lobed; styles united below, distinct above, and generally projecting beyond the stamen-column, mostly as many as the cells of the ovary; ovules 1 or several in each cavity. Fruit capsular (rarely a berry), several-celled, the carpels falling away entire or else loculicidally dehiscent. Seeds reniform, globose or obovoid; embryo curved; cotyledons large, plicate or conduplicate; endosperm little, or copious.

About 40 genera and 800 species, widely distributed in tropical and temperate regions.

Stamen-column anther-bearing at the summit.
- Carpels 1-seeded.
  - Flowers perfect.
    - Involucels of 6–9 bractlets. — 1. *Althaea.*
    - Involucels of 1–3 bractlets, or none.
      - Stigmas linear, on the inner side of the style-branches.
        - Carpels beakless; petals obcordate. — 2. *Malva.*
        - Carpels beaked; petals truncate. — 3. *Callirrhoë.*
      - Stigmas capitate, terminal.
        - Seed ascending. — 5. *Malvastrum.*
        - Seed pendulous. — 6. *Sida.*
  - Flowers dioecious. — 4. *Napaea.*
- Carpels 2–several-seeded.
  - Involucel none. — 7. *Abutilon.*
  - Involucel of 3 bractlets.
    - Carpels continuous. — 8. *Sphaeralcea.*
    - Carpels septate between the seeds. — 9. *Modiola.*

Stamen-column anther-bearing below the entire or 5-toothed summit.
- Carpels 1-seeded. — 10. *Kosteletzkya.*
- Carpels several-seeded. — 11. *Hibiscus.*

1. **ALTHAÈA** L. Sp. Pl. 686. 1753.

Tomentose or pilose herbs, with lobed or divided leaves, and axillary or terminal, solitary or racemose, perfect flowers. Involucels of 6–9 bractlets united at the base. Calyx 5-cleft. Petals 5. Stamen-column anther-bearing at the summit. Cavities of the ovary numerous, 1-ovuled; style-branches the same number as the ovary-cavities, stigmatic along the inner side; carpels numerous, indehiscent, 1-seeded, arranged in a circle around the axis. Seed ascending. [Ancient Greek, signifying to cure.]

About 15 species, natives of the temperate and warm parts of the Old World.

1. **Althaea officinàlis** L. Marsh-Mallow. Wymote. (Fig. 2414.)

Althaea officinalis L. Sp. Pl. 686. 1753.

Perennial, herbaceous, erect, 2°–4° high, branching, densely velvety pubescent. Leaves broadly ovate, acute or obtuse, dentate and generally 3-lobed, the lower ones often cordate; veins elevated on the lower surfaces; petioles ½′–1′ long; flowers in terminal and axillary narrow racemes, pink, about 1′–1½′ broad; bractlets of the involucels 6–9, linear, shorter than the 5 ovate-lanceolate acute calyx-segments; carpels 15–20, tomentose.

In salt marshes, coast of Massachusetts and New York. Reported from New Jersey. Naturalized from Europe. Roots thick, very mucilaginous, used in confectionery, and in medicine as a demulcent. Summer.

2. MÁLVA L. Sp. Pl. 687. 1753.

Pubescent or glabrate herbs, with dentate lobed or dissected leaves, and axillary or terminal solitary or clustered perfect flowers. Calyx 5-cleft. Bractlets of the involucels 3 (rarely none). Petals 5. Stamen-column anther-bearing at the summit. Cavities of the ovary several or numerous, 1-ovuled; style-branches of the same number, linear, stigmatic along the inner side. Carpels arranged in a circle, 1-seeded, beakless, indehiscent. Seed ascending. [Greek, referring to the emollient leaves.]

About 30 species, natives of the Old World. In addition to the following, another is naturalized in California.

Leaves with 5–9 shallow angular lobes.
  Petals 2–4 times the length of the calyx. 1. *M. sylvestris.*
  Petals 1–2 times the length of the calyx.
    Procumbent, low. 2. *M. rotundifolia.*
    Erect, tall. 3. *M. verticillata.*
Leaves deeply 5–7-lobed.
  Stem-leaves 1–3-pinnatifid; carpels downy. 4. *M. moschata.*
  Stem-leaves deeply lobed; carpels glabrous. 5. *M. Alcea.*

1. Malva sylvéstris L. High Mallow. (Fig. 2415.)

Malva sylvestris L. Sp. Pl. 689. 1753.

Biennial, erect or ascending, branched, pubescent with loose spreading hairs, or glabrate. Leaves orbicular, or reniform, 1¼′–4′ wide, with 5–9 shallow angular or rounded lobes, crenate-dentate, truncate or cordate at the base; petioles 2′–6′ long; flowers reddish-purple, 1′–1½′ broad, in axillary clusters; pedicels slender; petals 2–4 times as long as the calyx; carpels about 10, flat on the back, rugose-reticulate.

In waste places and along roadsides, sparingly adventive from Europe in the United States, Canada and Mexico. Native also of Siberia. Summer. English names, Common Mallow, Cheese-flower, Cheese-cake, Pick-cheese, Round Dock, Maul.

2. Malva rotundifòlia L. Low, Dwarf or Running Mallow. Cheeses. (Fig. 2416.)

M. rotundifolia L. Sp. Pl. 688. 1753.

Annual or biennial, procumbent and spreading from a deep root, branched at the base, stems 4′–12′ long. Leaves orbicular-reniform, 1′–3′ wide, cordate, with 5–9 broad shallow dentate-crenate lobes; petioles slender, 3′–6′ long; flowers clustered in the axils, pale blue, 4″–7″ broad; pedicels 6″–15″ long; petals about twice the length of the ovate acute calyx-lobes; carpels about 15, rounded on the back, pubescent.

In waste places, common throughout our territory, and widely distributed as a weed in other temperate regions. Naturalized from Europe. Native also of western Asia. English names, Dutch-cheese, Doll or Fairy Cheeses, Pellas. May–Nov.

3. Malva verticillàta L. Whorled Mallow. (Fig. 2417.)

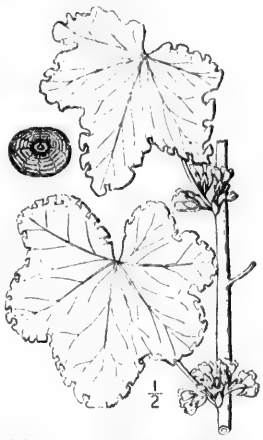
Malva verticillata L. Sp. Pl. 689. 1753.

Annual, erect, glabrous or nearly so, 4°–6° high. Leaves nearly orbicular with 5–11 shallow, angular dentate lobes, petioles elongated; flowers white or whitish, sessile, clustered in the axils, about the size of those of *M. rotundifolia*; petals about twice the length of the calyx-lobes; carpels rugose-reticulated.

In waste places, Vermont. Fugitive or adventive from Europe. Summer.

Malva verticillàta crispa L. Sp. Pl. 689. 1753.
Malva crispa L. Sp. Pl. Ed. 2, 970. 1763.

Margins of the leaves wrinkled and crisped. In waste places, sparingly escaped from gardens. Nova Scotia to Minnesota and New Jersey. Introduced from southern Europe or western Asia. This is the form shown in our figure. Known as Curled Mallow. Summer.

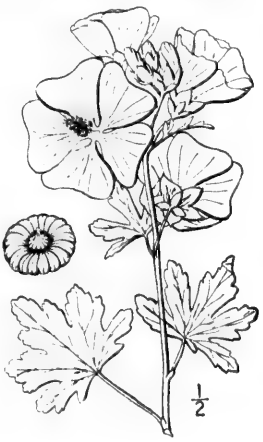


4. Malva moschàta L. Musk Mallow. (Fig. 2418.)

Malva moschata L. Sp. Pl. 690. 1753.

Perennial, erect, 1°–2° high, branching, pubescent with long hairs, or glabrate. Basal leaves orbicular, 3′–4′ wide, with 5–9 short broad rounded dentate lobes; stem-leaves deeply divided into linear or cuneate, pinnatifid or cleft segments; flowers 1½′–2′ broad, pink or white, racemosely clustered at the summits of the stem and branches; petals obcordate or emarginate, 5–8 times as long as the triangular-ovate acute calyx-lobes; carpels 15–20, densely hairy, rounded on the back.

In waste places and along roadsides, occasional in the Middle, Southern and Eastern States and in Canada. Adventive from Europe. Plant with a faint odor of musk. Summer.



5. Malva Álcea L. European Mallow. (Fig. 2419.)

Malva Alcea L. Sp. Pl. 689. 1753.

Similar to the preceding species, but the stem-leaves are only once 5–7-parted or cleft, the lobes dentate or incised; pubescence shorter and denser; flowers pink, purplish or white; petals obcordate; carpels glabrous, very finely rugose-reticulated.

In waste places, occasionally escaped from gardens. Introduced from Europe. Summer.

3. CALLÍRRHOË Nutt. Journ. Acad. Phil. 2: 181. 1821.

[NUTTALLIA Barton, Fl. N. A. 2: 74. *pl. 62.* 1822.]

Herbs, with lobed or divided leaves, and showy axillary or terminal perfect flowers. Bractlets of the involucel 1–3, separate, or none. Calyx deeply 5-parted. Petals cuneate, truncate, often toothed or fimbriate. Stamen-column anther-bearing at the summit. Cavities of the ovary ∞, 1-ovuled; style-branches of the same number as the cells of the ovary, stigmatic along the inner side. Carpels ∞ (10–20), arranged in a circle, 1-seeded, indehiscent or 2-valved, beaked at the apex, the beak separated from the cavity by a septum. Seed ascending. [A Greek mythological name.]

A genus of about 7 species, natives of the central and southern United States and northern Mexico.

Bractlets of the involucels none.
- Flowers 1′ broad; carpels very pubescent. — 1. *C. alceoides.*
- Flowers 1½′–2′ broad; carpels scarcely pubescent. — 2. *C. digitata.*

Bractlets of the involucels 3.
- Leaves triangular, crenate; carpels not rugose. — 3. *C. triangulata.*
- Leaves orbicular, palmatifid; carpels rugose. — 4. *C. involucrata.*

1. Callirrhoë alceoìdes (Michx.) A. Gray. Light Poppy-Mallow. (Fig. 2420.)

Sida alceoides Michx. Fl. Bor. Am. 2: 44. 1803.

Callirrhoë alceoides A. Gray, Mem. Am. Acad. (II.) 4: 18. 1848.

Perennial, erect, 8′–20′ high, slender, strigose-pubescent, branched at the base from a thick woody root. Basal leaves triangular, palmately lobed or incised, 2′–3½′ long, slender-petioled; stem-leaves palmatifid, the divisions linear or cuneate, acute or obtuse; flowers corymbose or racemose at the summit, pink or white, about 1′ broad; pedicels 1′–2′ long, slender; involucel none; calyx-lobes triangular, acuminate; petals dentate and somewhat fimbriate; carpels strigose-pubescent and conspicuously rugose-reticulate on the back.

In dry soil, Kentucky to Nebraska, Kansas and Texas. May–Aug.

2. Callirrhoë digitàta Nutt. Fringed Poppy-Mallow. (Fig. 2421.)

Callirrhoë digitata Nutt. Journ. Acad. Phila. 2: 181. 1821.

Nuttallia digitata Bart. Flora N. A. 2: 74. *pl. 62.* 1822.

Similar to the preceding species. Divisions of the stem-leaves longer, narrowly linear, sometimes quite entire and 4′–5′ long, sometimes deeply incised; basal leaves sometimes cordate-triangular, crenate, lobed or divided; involucre none; flowers long-peduncled, 1½′–2′ broad, reddish-purple or lighter; petals beautifully fimbriate; calyx-lobes triangular to lanceolate, acuminate; carpels strongly rugose-reticulate, scarcely pubescent.

In dry soil, Kansas to Texas. April–July.

3. Callirrhoë triangulàta (Leavenw.) A. Gray. Clustered Poppy-Mallow. (Fig. 2422.)

Malva triangulata Leavenw. Am. Journ. Sci. **7**: 62. 1824.

Callirrhoë triangulata A. Gray, Mem. Am. Mem. Acad. (II.) **4**: 16 1848.

Perennial, erect or ascending from a deep root, 1½°–2½° high, branched above, pubescent with short hairs. Leaves triangular-hastate, the lower long-petioled, crenate or slightly lobed, acute or obtusish, 2′–3′ long, the upper short-petioled or nearly sessile, smaller, 3–5-cleft or divided, the lobes narrow, dentate or crenate; flowers in terminal panicled clusters, 1′–2′ broad, short-pedicelled, deep purple; involucel of 3 linear or spatulate bractlets, nearly as long as the 5-lobed calyx; carpels numerous, hairy, not rugose, short-beaked.

Prairies, Illinois to Minnesota, south to Texas. June–Aug.

4. Callirrhoë involucràta (T. & G.) A. Gray. Purple Poppy-Mallow. (Fig. 2423.)

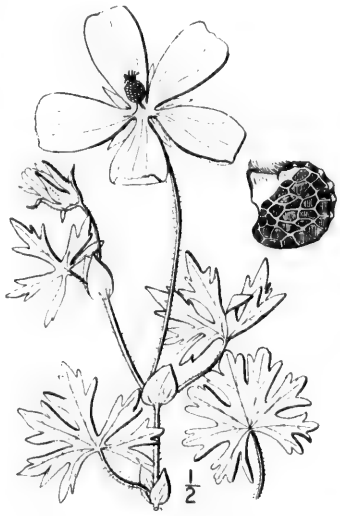
Nuttallia involucrata Nutt.; Torr. Ann. Lyc. N. Y. **2**: 172. Name only. 1828.

Malva involucrata T. & G. Fl. N. A. **1**: 226. 1838.

Callirrhoë involucrata A. Gray, Mem. Am. Acad. (II.) **4**: 16. 1848.

Perennial, branched from a deep root, procumbent or ascending, 1°–2° long, pubescent with long hispid hairs. Leaves cordate-orbicular, palmately lobed or palmatifid, the lobes obtuse or acute, dentate or incised, those of the upper leaves commonly narrower than those of the lower; stipules ovate, conspicuous; peduncles terminal and axillary, slender, 1-flowered; bractlets of the involucel 3, linear, half the length of the lanceolate acute 3–5-nerved calyx-lobes; flowers red-purple, 1′–2½′ broad; carpels rugose-reticulate.

In dry soil, Minnesota to Texas, Utah and New Mexico and northern Mexico. April–Aug.



4. NAPAÈA L. Sp. Pl. 686. 1753.

Erect perennial herbs, with palmately-lobed leaves, and small white dioecious flowers in ample terminal corymbose panicles. Involucels none. Calyx 5-toothed. Staminate flowers with 15–20 anthers borne at the summit of the stamen-column. Pistillate flowers with 8–10 styles, stigmatic along their inner surface, the stamen-column present but destitute of anthers. Cavities of the ovary as many as the styles, 1-ovuled. Carpels 8–10, separating at maturity from the axis, beakless, but minutely tipped, imperfectly 2-valved. Seed ascending. [Greek, a dell.]

A monotypic genus of the east-central United States.

1. Napaea dioica L. Glade Mallow.
(Fig. 2424.)

Napaea dioica L. Sp. Pl. 686. 1753.

Simple, or branching above, 4°–9° high, pubescent, or glabrate. Basal and lower leaves 6′–12′ broad, long-petioled, orbicular in outline, 7–11-parted nearly to the base, the divisions acute, dentate and lobed; upper leaves smaller, short-petioled, 5–9-lobed, the lobes incisely cut, acute or acuminate; staminate flowers 6″–9″ broad, the pistillate somewhat smaller; petals obovate, 2–3 times the length of the calyx; carpels strongly 1-nerved, slightly rugose-reticulate.

In moist grounds, southern Pennsylvania to Virginia, west to Minnesota and Iowa. July.

5. MALVÁSTRUM A. Gray, Mem. Am. Acad. (II.) 4: 21. 1848.

[Malveopsis Presl, Bem. Bot. 19. 1847.?]

Herbs, with entire cordate or divided leaves, and axillary or terminal, solitary or racemose, short-pedicelled perfect flowers. Calyx 5-cleft. Bractlets of the involucels small, 1–3 or none. Stamen-column anther-bearing at the apex. Cavities of the ovary 5–∞, 1-ovuled. Style-branches of the same number, stigmatic at the summit only, forming capitate stigmas; carpels indehiscent or imperfectly 2-valved, falling away from the axis at maturity, their apices pointed or beaked. Seed ascending. [Greek, star-mallow.]

About 75 species, natives of America and South Africa, 2 of them widely distributed as weeds in tropical regions. In addition to the following, about 12 other species inhabit the southern and western United States.

Leaves lanceolate-oblong, dentate. 1. *M. angustum.*
Leaves pedately 5-parted, the lobes incised. 2. *M. coccineum.*

1. Malvastum angústum A. Gray.
Yellow False Mallow.
(Fig. 2425.)

Sida hispida Pursh, Fl. Am. Sept. 452. 1814?
Malvastrum angustum A. Gray, Mem. Am. Acad. (II.) 4: 22. 1848.
Malveopsis hispida Kuntze, Rev. Gen. Pl. 72. 1891.

Annual, erect with the habit of a *Sida*, slender, branching, pubescent with appressed hairs, 6′–12′ high. Leaves oblong-lanceolate, or linear-oblong, petioled, acute, finely dentate with somewhat distant teeth, 9″–20″ long, 2″–4″ wide; flowers yellow, 4″–6″ broad, mostly solitary in the axils of the upper leaves, short-peduncled; bractlets of the involucre 2–3, linear, shorter than the ovate-triangular pubescent acute calyx-lobes; petals about equalling the calyx; carpels 5, somewhat pubescent, reniform, 2-valved at maturity.

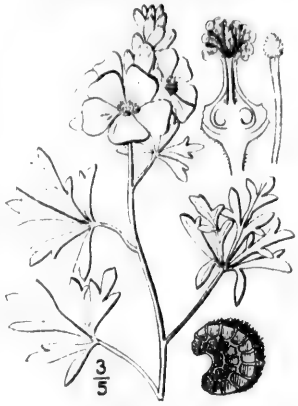
In dry ground, Tennessee and Illinois to Iowa and Kansas. Summer.

2. Malvastrum coccineum (Pursh) A.Gray. Red False Mallow. (Fig. 2426.)

Malva coccinea Nutt. in Fraser's Cat. Name only. 1813.
Cristaria coccinea Pursh, Fl. Am. Sept. 454. 1814.
Malvastrum coccineum A. Gray, Mem. Am. Acad. (II.) 4: 21. 1848.

Perennial, erect or ascending, 4′–10′ high, freely branched, densely and silvery stellate-pubescent. Lower leaves 1′–2′ wide, ovate-orbicular in outline, slender-petioled, the uppermost nearly sessile, all pedately 3–5-parted; lobes cuneate to linear, incised, mainly obtuse; flowers red, 6″–9″ broad, in dense short terminal spicate racemes; bractlets of the involucels commonly none; petals much longer than the lanceolate acutish calyx-lobes; carpels 10–15, rugose-reticulated, indehiscent, 1-seeded (rarely 2-seeded).

Prairies, Manitoba to Nebraska and Texas, west to British Columbia and New Mexico. May–Aug.



6. SÌDA L. Sp. Pl. 683. 1753.

Herbs, with serrate crenate or lobed leaves, and solitary or clustered, axillary or terminal, perfect flowers. Bractlets of the involucels none. Calyx 5-toothed or 5-cleft. Stamen-column anther-bearing at the summit. Cells of the ovary 5–∞, 1-ovuled; style-branches of the same number, stigmatic at the summit only. Carpels indehiscent, or at length 2-valved at the apex. Seed pendulous. [Greek, used by Theophrastus.]

About 75 species, natives of the warmer parts of America, Asia, Africa and Australasia. Besides the following, some 17 others occur in the southern and southwestern parts of the United States.

Leaves linear, ovate or oblong, serrate.
  Leaves ovate or oblong-lanceolate; flowers 2″–4″ broad. 1. *S. spinosa.*
  Leaves linear or linear-oblong; flowers 6″–12″ broad. 2. *S. Elliottii.*
Leaves palmately 3–7-lobed. 3. *S. hermaphrodita.*

1. Sida spinòsa L. Prickly Sida. (Fig. 2427.)

Sida spinosa L. Sp. Pl. 683. 1753.

Annual, erect, branching, finely and softly pubescent, 1°–2° high. Leaves ovate to oblong-lanceolate, 1′–2′ long, 5″–10″ wide, petioled, obtuse or acute, truncate or cordate at the base, crenate-dentate; flowers axillary, short-peduncled, yellow, 2″–4″ broad; peduncles shorter than the petioles; calyx-teeth triangular, acute; carpels 5, dehiscent at the apex into 2 beaks; stipules linear; petioles of the larger leaves with a small spine-like tubercle at the base.

In waste places, southern New York and New Jersey to Iowa and Michigan, south to Florida and Texas, and widely distributed in tropical America. Supposed by some to be naturalized at the north, but it occurs in New Jersey as if native. Summer.

2. Sida Elliòttii T. & G. Elliott's Sida. (Fig. 2428.)

Sida Elliottii T. & G. Fl. N. A. 1: 231. 1838.

Perennial, glabrous or nearly so, branching, 1°–4° high. Leaves short-petioled, linear or linear-oblong, 1′–2′ long, 2″–2½″ wide, mostly obtuse at each end, serrate-dentate; peduncles often longer than the petioles; flowers axillary, yellow, 6″–12″ broad, calyx-teeth broadly ovate, acute; carpels 8–10, dehiscent at the apex, slightly and abruptly pointed.

In dry soil, southern Virginia to Florida, west to Chihuahua. Summer.

3. **Sida hermaphrodita** (L.) Rusby. Virginia Mallow. (Fig. 2429.)

Napaea hermaphrodita L. Sp. Pl. 686. 1753.
Sida Napaea Cav. Diss. 5: 277. *pl. 132. f. 1.* 1788.
Sida hermaphrodita Rusby, Mem. Torr. Club, 5: 223. 1894.

Perennial, nearly glabrous, branching, 4°–10° high. Leaves petioled, 3′–6′ wide, ovate-orbicular, deeply 3–7-lobed or cleft, the lobes lanceolate or ovate, the middle one commonly longest, all incised dentate, acute or acuminate; flowers white, 9″–12″ broad, numerous in terminal corymbose panicles; pedicels, calyx and petioles of the upper leaves finely pubescent; calyx-lobes short and broad, acute; carpels about 10, acute, dehiscent at the top.

Along rivers, in rocky places, southern Pennsylvania, West Virginia and Virginia. Summer.

7. **ABÙTILON** Gaertn. Fruct. et Sem. 2: 251. *pl. 135.* 1791.

Herbs or shrubs, sometimes trees in tropical countries, mostly soft-pubescent, with cordate angular or lobed leaves and axillary flowers. Involucels none. Calyx 5-cleft. Stamen-column anther-bearing at the apex. Cavities of the ovary 5–∞, 3–9-ovuled. Style-branches the same number as the ovary-cavities, stigmatic at the apex; carpels 2-valved, often rostrate, falling away from the axis at maturity. Seeds more or less reniform, the upper ascending, the lower pendulous or horizontal. [Name given by the celebrated Arabian physician Avicenna (Ibn Sina), died 1037.]

About 90 species, natives of warm and tropical regions of both hemispheres. In addition to the following, some 15 others inhabit the southern and southwestern parts of the United States.

1. **Abutilon Abùtilon** (L.) Rusby. Velvet Leaf. Indian Mallow. (Fig. 2430.)

Sida Abutilon L. Sp. Pl. 685. 1753.
Abutilon Avicennae Gaertn. Fruct. et Sem. 2: 251. *pl. 135.* 1791.
A. Abutilon Rusby, Mem. Torr. Club, 5: 222. 1894.

Annual, stout, 3°–6° high, branched, densely and finely velvety-pubescent. Leaves long-petioled, cordate, ovate-orbicular, 4′–12′ wide, dentate, or nearly entire, acuminate, the point blunt; flowers yellow, 6″–9″ broad, axillary, solitary; peduncles stout, shorter than the petioles; head of fruit 1′ in diameter or more; carpels 12–15, pubescent, dehiscent at the apex, each valve beaked by a slender awn.

In waste places, frequent or common throughout our area, except the extreme north. Naturalized or adventive from southern Asia, and widely distributed as a weed in warm countries. Called also American Jute. Aug.–Oct.

8. **SPHAERÁLCEA** St. Hil. Plant. Us. Bras. *pl. 52.* 1825.

Herbs or shrubs with the habit of *Malvastrum*. Bractlets of the involucels 3, distinct, or united at the base. Stamen-column anther-bearing at the summit. Cavities of the ovary 5–∞, 2–3-ovuled. Style-branches the same number as the ovary-cavities, stigmatic at the apex; carpels 2-valved, not septate between the seeds, separating from the axis at maturity. Seeds reniform. [Greek, globe-mallow.]

About 30 species, natives of America and South Africa. In addition to the following, about 14 others occur in the southwestern United States.

1. **Sphaeralcea acerifòlia** Nutt. Maple-leaved Globe-Mallow. (Fig. 2431.)

Sphaeralcea acerifolia Nutt.; T. & G. Fl. N. A. 1: 228. 1838.
Sphaeralcea rivularis Torr.; A. Gray, Mem. Am. Acad. (II.) 4: 23. 1848.

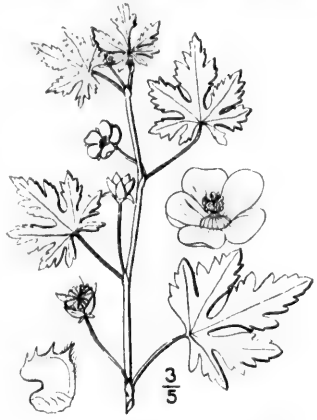
Perennial, erect, branched, 2°–6° high, finely stellate-pubescent and scabrous. Leaves nearly orbicular in outline, palmately 5–7-lobed or cleft, cordate, the lobes ovate or lanceolate, dentate, acute, the middle one generally longest; flowers pink or white, 1′–1½′ broad, short-pedicelled, clustered in the upper axils or in terminal spike-like racemes; bractlets of the involucels linear, shorter than the calyx; calyx-lobes triangular, acute; carpels stellate-pubescent and hairy, not beaked.

Kankakee Co., Ill.; Dakota, west to Nevada and British Columbia. Summer.

9. **MODÌOLA** Moench, Meth. 619. 1794.

Prostrate or ascending herbs, often rooting from the nodes, with palmately cleft or divided leaves, and small axillary peduncled red flowers. Bracts of the involucre 3, distinct. Calyx 5-cleft. Stamen-column anther-bearing at the apex. Cavities of the ovary ∞, 2–3-ovuled. Style-branches stigmatic at the summit; carpels 15–20, septate between the seeds, dehiscent into 2 valves with awn-pointed tips, and aristate on the back. [Latin, from the likeness of the fruit to the small Roman measure, *modiolus*.]

A monotypic genus of warm and temperate America and South Africa.



1. **Modiola Caroliniàna** (L.) Don. Bristly-fruited Mallow. (Fig. 2432.)

Malva Caroliniana L. Sp. Pl. 688. 1753.
Modiola multifida Moench, Meth. 620. 1791.
Modiola Caroliniana Don, Gen. Hist. Pl. 1: 466. 1831.

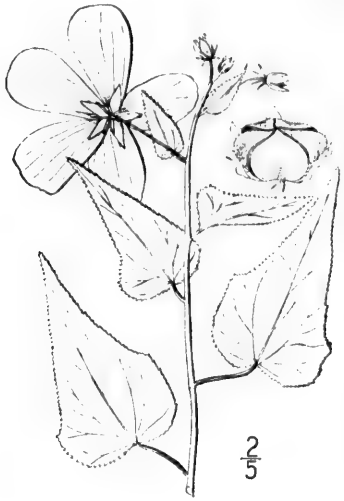
Decumbent, annual or biennial, more or less pubescent, freely branching; stems 6′–18′ long. Leaves nearly orbicular in outline, ½′–2½′ wide, petioled, pedately 3–5-cleft, the lobes dentate or incised; leaves sometimes simply dentate; flowers axillary, solitary, 3″–5″ broad, red; peduncles at length elongated, slender; fruit depressed-orbicular, the carpels hispid-aristate along the back.

In low grounds, Virginia to Florida, west to Texas, and in Central and South America. The same species apparently occurs in South Africa. Summer.

10. **KOSTELÉTZKYA** Presl, Rel. Haenk. 2: 130. *pl. 70.* 1836.

Perennial, scabrous or pubescent herbs or shrubs, with hastate or angular leaves, and showy, axillary or paniculate flowers. Bractlets of the involucels several, linear. Calyx 5-toothed or 5-cleft. Stamen-column entire, or 5-toothed at the summit, anther-bearing below for nearly its entire length. Ovary 5-celled, the cells 1-ovuled; style-branches of the same number, stigmatic at the capitate summits. Capsule depressed, 5-angled. Seeds reniform, ascending. [Named in honor of V. F. Kosteletzky, a botanist of Bohemia.]

About 6 species, natives of warm and temperate America. In addition to the following, 2 others occur in the southern and southwestern United States.



1. **Kosteletzkya Virginica** (L.) A. Gray. Virginia Kosteletzkya. (Fig. 2433.)

Hibiscus Virginicus L. Sp. Pl. 697. 1753.

Kosteletzkya Virginica A. Gray, Gen. 2: 80. *t.* 132. 1849.

Perennial, erect, branching, 2°–4° high, somewhat stellate-pubescent and scabrous. Leaves ovate, or hastate, truncate or cordate at the base, 2′–5′ long, unequally dentate and often 3-lobed below, sometimes with an additional lobe or two at the middle, acute, not velvety-pubescent; flowers pink, 1½′–2½′ broad, in loose terminal leafy panicles; bractlets of the involucels 8–9, linear, shorter than the lanceolate acute calyx-segments; carpels 5, hispid-pubescent.

In salt or brackish marshes, southeastern New York to Florida and Louisiana. A form approaching *K. althaeifolia* of the Southern States occurs in eastern Maryland. Aug.

11. HIBÍSCUS L. Sp. Pl. 693. 1753.

Herbs, shrubs, or in tropical regions even small trees, with dentate or lobed leaves, and showy, axillary or paniculate, mostly campanulate flowers. Bractlets of the involucels numerous, narrow. Calyx 5-cleft or 5-toothed. Column of stamens truncate or 5-toothed at the apex, anther-bearing below along much of its length. Ovary 5-celled, the cells 3–several-ovuled; style branches 5, stigmatic at the capitate summit. Capsule 5-valved. Seeds reniform. [An ancient name, used by Dioscorides for the Marsh Mallow.]

About 180 species, widely distributed in warm and temperate countries. In addition to the following, about 14 others occur in the southern and western United States.

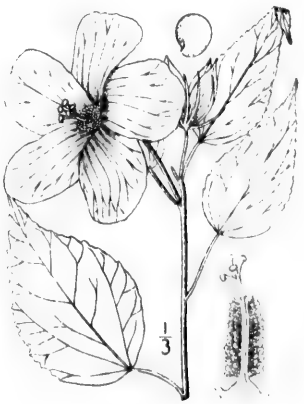
Tall perennial herbs.
- Leaves white-pubescent beneath; seeds glabrous, or nearly so.
  - Leaves glabrate, or stellate-hairy above; bractlets not ciliate. — 1. *H. Moscheutos.*
  - Leaves soft-hairy above; bractlets ciliate. — 2. *H. lasiocarpus.*
- Leaves glabrous on both sides; seeds hairy. — 3. *H. militaris.*

Low hairy annual of waste places. — 4. *H. Trionum.*

Tall woody shrub, escaped from gardens. — 5. *H. Syriacus.*

1. **Hibiscus Moscheùtos** L. Swamp Rose-Mallow. Mallow Rose. (Fig. 2434.)

Hibiscus Moscheutos L. Sp. Pl. 693. 1753.



Erect, 4°–7° high, forming numerous cane-like stems from a perennial root. Leaves ovate or ovate-lanceolate, 3′–7′ long, cordate or obtuse at the base, acute or acuminate at the apex, the lower or sometimes all lobed at the middle, palmately veined, dentate or crenate, densely white stellate-pubescent beneath, green and glabrous or slightly stellate above; petioles 1′–5′ long; flowers 4′–7′ broad, pink, or white, often with a crimson centre, clustered on stout pedicels at the summits of the stems; peduncles often adnate to the petioles; bractlets linear, not ciliate, shorter than the calyx; capsule ovoid, 1′ long, glabrous or sparingly pubescent; seeds glabrous.

In brackish marshes, eastern Massachusetts to Florida and Louisiana, and on lake shores and in saline situations locally in the interior to western Ontario. Dr. Gray concluded that the *Hibiscus roseus* of southern Europe is identical with our plant. Aug.–Sept.

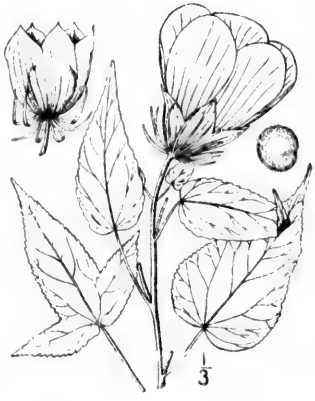
2. Hibiscus lasiocàrpus Cav. Hairy-fruited Rose-Mallow. (Fig. 2435.)

Hibiscus lasiocarpus Cav. Diss. 3: 159. *pl. 70. f. 1.* 1787.

Resembles the preceding species. Leaves broadly ovate, dentate or 3–7-lobed, mostly cordate or truncate at the base; pubescence of the lower surface white and densely stellate, that of the upper surface darker, with longer soft nearly simple hairs; bractlets of the involucels linear, equalling the calyx or shorter, ciliate; capsule ovoid, densely and finely hairy; seeds nearly glabrous.

In swamps, southern Indiana to Missouri, south to Florida and Texas. Aug.

3. Hibiscus militàris Cav. Halberd-leaved Rose-Mallow. Sweating-weed. (Fig. 2436.)

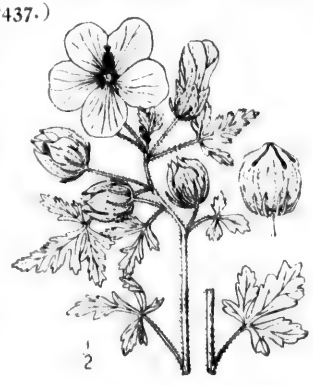


Hibiscus militaris Cav. Diss. 3: 352. *pl. 198. f. 2.* 1787.
Hibiscus Virginicus Walt. Fl. Car. 177. 1788. Not L. 1753.

Erect, 3°–5° high, nearly glabrous throughout. Leaves 4′–5′ long, ovate in outline, acute, or acuminate, cordate or truncate at the base, the lower, or sometimes all, hastately lobed, the margins dentate-crenate; petioles 1′–6′ long; flowers pink with a darker eye, 2′–3′ long, axillary or clustered at the ends of the stem or branches; peduncles shorter than the petioles and jointed above the middle; bractlets of the involucels linear, slightly shorter than the calyx, glabrous, or with a few scattered hairs; fruiting calyx inflated; capsule ovoid, enclosed by the calyx, glabrous, or in some southern forms finely stellate-pubescent; seeds silky.

Along rivers, southern Pennsylvania to Florida, west to Minnesota and Louisiana. Aug.–Sept.

4. Hibiscus Triònum L. Bladder Ketmia. Flower-of-an-Hour. Venice Mallow. (Fig. 2437.)



Hibiscus Trionum L. Sp. Pl. 697. 1753.

Annual, depressed and branching from the base, pubescent with spreading hairs. Leaves petioled, ovate or orbicular in outline, pedately 3–7-lobed or divided, the lobes obtuse, dentate-crenate or cleft, the middle one longer; flowers pale yellow with a purple eye, 1′–2½′ broad, axillary to the upper leaves, each one remaining open but a few hours; petals tinged with purple on the outer edge; bracts linear, ciliate, much shorter than the membranous beautifully nerved hispid-pubescent 5-angled inflated calyx; capsule globose-ovoid, hairy; seeds roughened with short processes.

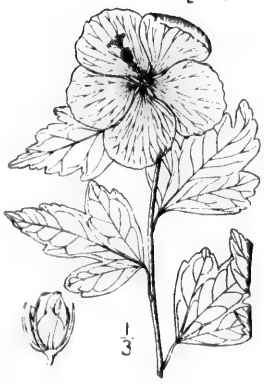
In waste places, Nova Scotia to Florida, and locally in the interior. Adventive from southern Europe. Aug.–Sept. Called also Black-eyed Susan.

5. Hibiscus Syriacus L. Shrubby Althaea. Rose-of-Sharon. (Fig. 2438.)

Hibiscus Syriacus L. Sp. Pl. 695. 1753.

A branching nearly glabrous shrub, 10°–20° high. Leaves short-petioled, ovate, 2′–5′ long, obtuse or cuneate at the base, acute but blunt at the apex, 3–5-lobed or the upper merely dentate, sometimes with a few scattered stellate hairs on the upper surface; flowers axillary, short-peduncled, pink or white with a crimson centre, 2′–4′ broad; bractlets linear, shorter than the calyx, or slightly exceeding it; peduncles, bractlets and calyx stellate-pubescent; capsule ovoid, nearly 1′ long.

Sparingly escaped from cultivation in southern New Jersey and Pennsylvania. Introduced from western Asia. Aug.–Sept.



Family 75. **THEÀCEAE** DC. Prodr. 1: 529. 1824.

Tea Family.

Trees or shrubs, with alternate or rarely opposite pinnately-veined mainly exstipulate leaves, and large axillary or terminal flowers. Flowers regular, mostly perfect. Sepals 5 (rarely 4–7), imbricated, the inner ones generally larger than the outer. Calyx often 2-bracted at the base. Petals 5 (rarely 4–9), hypogynous, imbricated, crenulate. Stamens ∞, numerous, hypogynous, more or less united at their bases. Ovary sessile, 2–several-celled; styles 1 or several; ovules 2 or more in each cavity. Fruit a 3–5-celled generally woody capsule with loculicidal or septicidal dehiscence; endosperm little or none; embryo large, with conduplicate cotyledons.

About 16 genera and 160 species, natives of tropical and warm regions.

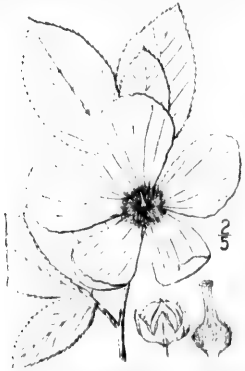
Stamens monadelphous. 1. *Stuartia.*
Stamens 5-adelphous. 2. *Gordonia.*

1. **STUÀRTIA** L. Sp. Pl. 698. 1753.*

Shrubs, with deciduous membranous serrulate leaves, and large showy axillary solitary flowers on short peduncles. Sepals 5, rarely 6, slightly unequal, ovate or lanceolate. Petals of the same number, obovate. Stamens monadelphous below; anthers versatile. Ovary 5-celled; styles 1 or 5; ovules 2 in each cell, anatropous; capsule ovoid, woody, 5-celled, loculicidally dehiscent. Embryo straight. Cotyledons oval, longer than the inferior radicle. [Named in honor of John Stuart, Marquis of Bute.]

Six species, natives of North America and Japan.

Style 1, compound; stigma 5-lobed; seeds marginless; capsule subglobose. 1. *S. Malachodendron.*
Styles 5, distinct; seeds wing-margined; capsule ovoid, 5-angled. 2. *S. pentagyna.*



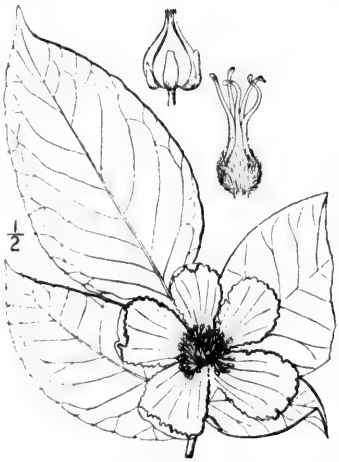
1. Stuartia Malachodéndron L. Round-fruited Stuartia. (Fig. 2439.)

Stewartia Malachodendron L. Sp. Pl. 698. 1753.
Stewartia Virginica Cav. Diss. 5: *pl. 158. f. 2.* 1787.

A shrub, 6°–12° high, the branches pubescent when young. Leaves oval, acute or acuminate at each end, 2′–3′ long, 1½′–2′ wide, serrulate with mucronate-tipped teeth, pubescent below, glabrous above; petioles 2″–4″ long; flowers axillary, 3′–4′ broad, solitary or occasionally in pairs, very short-peduncled; sepals ovate or orbicular, obtuse, silky-pubescent, united at the base; petals white, sparingly pubescent on the under side, minutely crenulate; filaments purple; anthers blue; style 1, compound; stigma 5-lobed; capsule subglobose, 6″–8″ long, pubescent; seeds marginless.

In woods, Virginia to Florida, west to Louisiana. April–May.

* Original spelling *Stewartia.*



2. Stuartia pentágyna L'Her. Angled-fruited or Mountain Stuartia. (Fig. 2440.)

Stuartia pentagyna L'Her. Stirp. Nov. 155. *pl.* 74. 1784.
Malachodendron ovatum Cav. Diss. 5: *pl. 158. f. 2.* 1787.

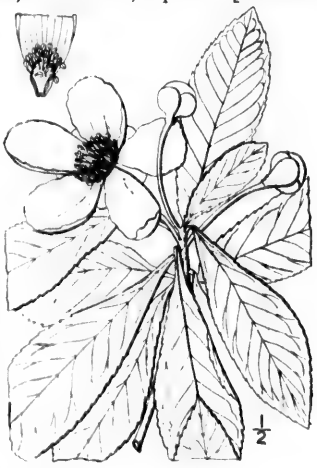
A shrub resembling the preceding species. Leaves oval, or ovate, larger, 4′–6′ long, 2′–3′ wide, acuminate at the apex, obtuse or sometimes acute at the base, pubescent beneath, mucronate-serrulate or rarely entire; flowers axillary, solitary, 2′–3′ broad; peduncles 3″–7″ long; sepals lanceolate, acutish, hairy; petals cream-color, crenulate; styles 5, distinct; capsule 5-angled, ovoid, acute, 9″ long, densely pubescent; seeds wing-margined.

In woods, mountains of Kentucky and North Carolina to Georgia and Alabama. June.

2. GORDÒNIA Ellis, Phil. Trans. 60: 518. *pl. 11.* 1770.

Trees or shrubs, with coriaceous evergreen leaves, and large white solitary axillary flowers, often clustered at the ends of branches. Sepals 5, imbricated, rounded, concave. Petals 5, imbricated, obovate. Stamens ∞, 5-adelphous, each cluster cohering with the base of a petal. Ovary 1, 3–5-celled; style 1; stigma 5-rayed. Capsule woody, ovoid, 5-valved, the axis persistent. Seeds compressed, with a short terminal or lateral wing; embryo straight or oblique; cotyledons ovate, longitudinally plaited; radicle short, superior. [Named for James Gordon, a London nurseryman.]

About 16 species, natives of eastern North America, Mexico and eastern Asia.



1. Gordonia Lasiánthus L. Loblolly Bay. Tan Bay. (Fig. 2441.)

Hypericum Lasianthus L. Sp. Pl. 783. 1753.
Gordonia Lasianthus L. Mant. 2: 570. 1771.

A tree 45°–75° high. Leaves lanceolate, or oblong, acute, attenuate and involute at the base, very nearly sessile, coriaceous, persistent, 3′–5′ long, 1′–2′ wide, serrulate, glabrous, shining; peduncles 1′–3′ long, ascending, 1-flowered; flowers 1½′–2′ broad; sepals orbicular, silky, ciliate; petals slightly pubescent without; capsule ovoid-conic, pointed, 6″–8″ long, sometimes 6-valved.

In low woods, Virginia to Florida. Wood soft, light red; weight per cubic foot 29 lbs. May–July.

Family 76. HYPERICÀCEAE Lindl. Nat. Syst. Ed. 2, 77. 1836.

ST. JOHN'S-WORT FAMILY.

Herbs or shrubs, sometimes small trees in tropical regions, with opposite or rarely verticillate simple entire or rarely glandular-ciliate or dentate leaves, no stipules, and terminal, or axillary solitary or cymose-paniculate flowers. Foliage pellucid-punctate or black-dotted. Flowers regular and perfect. Sepals 5 or 4, imbricated. Petals of the same number, hypogynous, generally oblique or contorted. Stamens ∞, hypogynous, often in sets of 3 or 5; anthers versatile or

innate, 2-celled, longitudinally dehiscent. Ovary 1–7-celled, composed of 1–7 carpels; styles as many as the carpels; ovules ∞, in 2 rows in each cavity, anatropous. Fruit mainly capsular with septicidal dehiscence; seeds mainly straight; endosperm none.

About 10 genera and 280 species, natives of temperate and warm regions, a few extending into sub-arctic or alpine districts.

Sepals 4, in unequal pairs; petals 4.	1. *Ascyrum.*
Sepals and petals 5.	
Petals yellow.	
Leaves normal, not reduced to scales.	2. *Hypericum.*
Leaves reduced to minute appressed scales.	3. *Sarothra.*
Flowers pink or greenish purple.	4. *Triadenum.*

1. ÁSCYRUM L. Sp. Pl. 787. 1753.

Leafy glabrous low shrubs, with the aspect of *Hypericum*. Flowers bright yellow. Sepals 4, in 2 pairs, the exterior ones broad and round, the interior smaller and narrower. Petals 4, oblique or slightly contorted, deciduous. Stamens ∞, distinct, or united in clusters. Ovary 1-celled, with 2–4 parietal placentae; styles 2–4. Capsule 1-celled, 2–4-valved, dehiscent at the placentae. [Greek, not rough.]

About 5 species, natives of eastern and southeastern North America, the West Indies and Central America.

Erect, 1°–2° high; leaves clasping; styles 3–4.	1. *A. stans.*
Diffusely branched, 5′–10′ high; leaves sessile; styles 2.	2. *A. hypericoides.*

1. Ascyrum stáns Michx. St. Peter's-wort. (Fig. 2442.)

Ascyrum stans Michx. Fl. Bor. Am. 2: 77. 1803.

Erect, simple or with a few upright branches, 1°–2° high. Stems and branches 2-edged or slightly winged; leaves clasping, erect or ascending, oval, or broadly oblong, 9″–18″ long, 5″–7″ wide, obtuse, thick; cyme terminal, few-flowered; pedicels 4″–6″ long, 2-bracted below the middle; flowers 8″–12″ broad; outer sepals nearly orbicular, 4″–6″ long, cordate, the inner lanceolate, 3″–6″ long; petals obovate, longer than the sepals; styles 3 or 4, short; capsule ovoid, about 3″ long.

In dry sandy soil, especially in pine barrens, Long Island, southern New Jersey and eastern Pennsylvania to Florida, west to Texas. July–Aug.

2. Ascyrum hypericoides L. St. Andrew's Cross. (Fig. 2443.)

Ascyrum hypericoides L. Sp. Pl. 788. 1753.
Ascyrum Crux-Andreae L. Sp. Pl. Ed. 2, 1107. 1763.

Low, much branched from the base, diffuse or ascending, 5′–10′ high. Stems and branches flattened and 2-edged; leaves oblong or obovate, sessile, narrowed and 2-glandular at the base, ½′–1½′ long, 2″–4″ wide, thin, obtuse; flowers terminal or also axillary; pedicels 1″–3″ long; 2-bracted near the summit; flowers 6″–9″ broad; outer sepals oval or ovate, sometimes cordate, 4″–6″ long, 2″–4″ wide, obtuse, the inner narrower and mainly shorter; petals oblong-linear, about equalling the outer sepals; styles 2; capsule ovoid, about 2″ long.

In dry sandy soil, Nantucket, Mass., to Florida, Illinois, the Indian Territory and Texas. Ascends to 2800 ft. in Virginia. July–Aug.

2. HYPÉRICUM L. Sp. Pl. 783. 1753.

Herbs or shrubs, with opposite punctate or black-dotted leaves, and mostly cymose yellow flowers. Sepals 5, equal or nearly so. Petals 5, mainly oblique or contorted, convolute or imbricated in the bud. Stamens ∞, distinct, or more or less united in clusters, sometimes with interposed hypogynous glands. Ovary 1-celled, with 3–5 parietal placentae which sometimes project far into the cavity, or 3–5-celled (rarely 6-celled); ovules ∞, generally numerous; styles 3–6. Capsule 1–5-celled (rarely 6-celled). [The Greek name.]

About 210 species, of wide geographic distribution. In addition to the following, 12 others occur in the southern and western United States and British America.

* **Styles 5; large perennials; pods 5-celled.**

Flowers 1′–2′ broad; capsules 9″–10″ long. 1. *H. Ascyron.*
Flowers 6″–12″ broad; capsules 3″–6″ long. 2. *H. Kalmianum.*

* * **Styles 3 (rarely 4).**

† Tall leafy shrubs; pods 3-celled.
Flowers 6″–8″ broad; pods 4″–6″ long. 3. *H. prolificum.*
Flowers 4″–6″ broad; pods 2″–3″ long. 4. *H. densiflorum.*
† † Herbaceous, sometimes woody at the base.

‡ Stamens numerous (15–40); flowers 3″–12″ broad.

Capsules 1-celled or incompletely 3–4-celled.
Capsules incompletely 3–4-celled by the projecting placentae.
Leaves linear, 1″–2″ wide. 5. *H. galioides.*
Leaves oblong, 3″–5″ wide. 6. *H. adpressum.*
Capsules strictly 1-celled; placentae parietal.
Styles united into a beak, separate above; stigmas minute.
Leaves linear or linear-oblong; seeds transversely rugose.
Nearly simple, erect; pod globose. 7. *H. sphaerocarpum.*
Branched, decumbent; pod 3-sided. 8. *H. dolabriforme.*
Leaves elliptic; seeds minutely pitted and striate. 9. *H. ellipticum.*
Styles separate; stigmas capitate; cyme naked. 10. *H. virgatum.*
Capsules completely 3-celled; styles separate.
Leaves linear or oblong; sepals lanceolate. 11. *H. perforatum.*
Leaves broadly oblong, oval or ovate-lanceolate.
Sepals ovate; petals 2″–3″ long. 12. *H. maculatum.*
Sepals lanceolate; petals 5″–7″ long. 13. *H. graveolens.*

‡ † Stamens few (5–12); flowers ¼″–3″ broad.

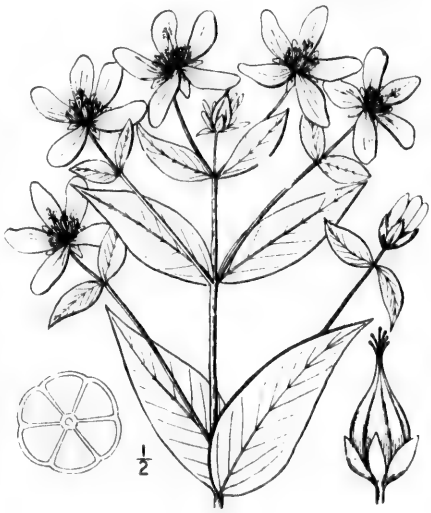
Leaves spreading or ascending, 3–7-nerved.
Cyme leafy-bracted. 14. *H. boreale.*
Cymes subulate-bracted.
Leaves ovate, oval, oblong or lanceolate, 5–7-nerved.
Leaves ovate, oval or oblong; capsule 1″–2½″ long.
Leaves obtuse; sepals linear-oblong, acutish or obtuse. 15. *H. mutilum.*
Leaves acute, or only the lower obtuse; sepals long-acuminate. 16. *H. gymnanthum.*
Leaves lanceolate or oblong-lanceolate; capsule 4″–5″ long. 17. *H. majus.*
Leaves linear, obtuse, 3-nerved. 18. *H. Canadense.*
Leaves linear, erect, 1-nerved. 19. *H. Drummondii.*

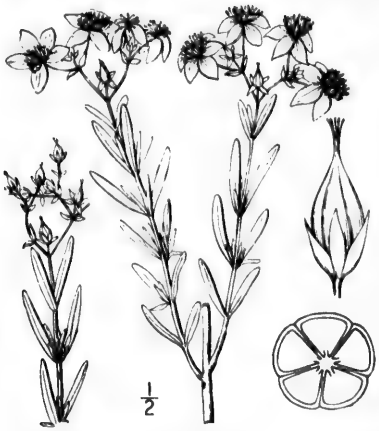
1. Hypericum Áscyron L.
Great or Giant St. John's-wort. (Fig. 2444.)

Hypericum Ascyron L. Sp. Pl. 783. 1753.
Hypericum pyramidatum Ait. Hort. Kew. 3: 103. 1789.

Perennial, herbaceous, erect, 2°–6° high, branching, the branches often nearly erect, angled. Leaves sessile, clasping, ovate-oblong or ovate-lanceolate, 2′–5′ long, ½′–1½′ wide, obtuse or acute; cymes terminal, few-flowered; flowers bright yellow, 1′–2′ broad; pedicels stout, ¼′–2′ long; sepals ovate-lanceolate, 4″–6″ long, acute; petals obovate or oblanceolate, tardily deciduous; styles usually 5, united below; stamens numerous, united in 5 sets; capsule ovoid, 9″–10″ long, 5-celled.

Banks of streams, western Quebec and Vermont to Manitoba, south to Connecticut, northern New Jersey, Illinois, Iowa and Minnesota. Also in northern Europe and Asia. July–Aug.





2. Hypericum Kalmiànum L. Kalm's St. John's-wort. (Fig. 2445.)

Hypericum Kalmianum L. Sp. Pl. 783. 1753.

Shrubby, freely branching, 1°–2° high, leafy; branches 4-angled, twigs flattened and 2-edged. Leaves oblong-linear or oblanceolate, sessile, or narrowed into a short petiole, obtuse, 1′–2½′ long, 2″–4″ wide, more or less glaucous beneath, generally with smaller ones clustered in the axils; cymes terminal, few-flowered; pedicels stout, 2″–10″ long; flowers 6″–12″ broad; sepals foliaceous, oblong, acute, 3″–4″ long, usually about half the length of the petals; stamens very numerous, distinct; styles 5 (4–6), united below into a beak; capsule ovoid, 3″ long, completely 5- (4–6-) celled.

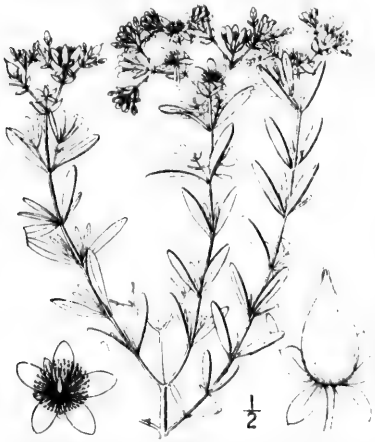
Niagara Falls to Sault Ste. Marie along Lakes Erie and Huron; also at Muskoka, Ont., and in "the oak-barrens of Tullahoma, Tenn." (Gattinger.) Aug.

3. Hypericum prolificum L. Shrubby St. John's-wort. (Fig. 2446.)

Hypericum prolificum L. Mant. 1: 106. 1767.

Shrubby, diffusely branched from near or at the base, 1°–3° high; stems sometimes 1′ in diameter; branches ascending or erect, leafy; branchlets 2-edged. Leaves linear-oblong or oblanceolate, narrowed at the base, or tapering into a short petiole, obtuse, often mucronulate, pale beneath, 1′–3′ long, 3″–9″ wide, with tufts of smaller ones in the axils; cymes several-many-flowered, terminal and sometimes also axillary; pedicels 6″ long or less; flowers 5″–8″ broad; sepals slightly unequal, shorter than the petals; stamens numerous, distinct; styles 3; capsules 3-celled, 4″–6″ long.

Sandy or rocky soil, New Jersey to Georgia. Ascends to 3400 ft. in Virginia. July–Sept.



4. Hypericum densiflòrum Pursh. Bushy or Dense-flowered St. John's-wort. (Fig. 2447.)

Hypericum densiflorum Pursh, Fl. Am. Sept. 376. 1814.

Hypericum prolificum var. *densiflorum* A. Gray, Man. Ed. 3, 84. 1867.

Erect, 4°–6° high, shrubby, freely branching, densely leafy; branches somewhat angled and branchlets 2-edged. Leaves crowded, 1′–2′ long, 1½″–3″ wide, acutish or obtuse, with smaller ones clustered in the axils; cymes densely many-flowered, mainly terminal; pedicels 1″–4″ long; flowers 4″–6″ broad; sepals narrow, not foliaceous, shorter than the petals; stamens numerous, distinct; styles 3; capsule completely 3-celled, 2″–3″ long.

Pine-barrens of New Jersey to Florida, west to Tennessee, Arkansas and Texas. July–Sept.

5. Hypericum galioìdes Lam. Bedstraw St. John's-wort. (Fig. 2448.)

Hypericum galioides Lam. Encycl. 4: 161. 1797.

Perennial, somewhat woody, branching, 1°–2½° high, the stems and branches nearly terete. Leaves linear, linear-oblong or oblanceolate, with smaller ones clustered in their axils, obtusish, thick, spreading, narrowed below, ¼′–2½′ long, 1″–2″ wide, involute in drying; flowers short-pedicelled, 3″–5″ broad; sepals narrowly linear, foliaceous, resembling the uppermost leaves, shorter than the pointed oblique petals; stamens numerous, distinct; styles 3; capsule 2″–3″ long, incompletely 3-celled by the projecting placentae.

In low grounds, Delaware to Florida, west to eastern Tennessee and Louisiana. July–Sept.

6. Hypericum adprèssum Bart. Creeping St. John's-wort. (Fig. 2449.)

H. adpressum Bart. Comp. Fl. Phil. 2: 15. 1818.

Stem nearly simple, erect or ascending from a perennial creeping or decumbent base, 1°–2° high, angled below, 2-edged above. Leaves oblong or lanceolate, 1′–2′ long, 3″–5″ wide, obtuse, ascending, often with smaller ones fascicled in the axils; cyme terminal, several-flowered, leafy only at the base; pedicels about 1″ long; flowers 6″–9″ broad; sepals lanceolate, acute, about half the length of the petals; stamens numerous, distinct; styles 3 or 4; capsule about 2″ long, incompletely 3–4-celled by the projecting placentae.

In low grounds, Nantucket, Mass., to New Jersey and Pennsylvania, south to Georgia, Louisiana, Missouri and Arkansas. July–Aug.

7. Hypericum sphaerocàrpum Michx. Round-podded St. John's-wort. (Fig. 2450.)

H. sphaerocarpum Michx. Fl. Bor. Am. 2: 78. 1803.

Simple or branching, erect or ascending from a somewhat woody perennial base, 1°–2½° high; stems 4-angled. Leaves oblong or linear-oblong, obtuse, 1½′–3′ long, 3″–6″ wide, often with smaller ones in the axils; cymes terminal, several or many-flowered, naked or bracted; flowers sessile or nearly so, 5″–8″ broad; sepals linear, lanceolate or ovate, much shorter than or equalling the petals; stamens numerous, distinct; styles 3, united below; capsule strictly 1-celled, globose or ovoid-conic, 2″–2¼″ long; seeds larger than in related species, rough-pitted.

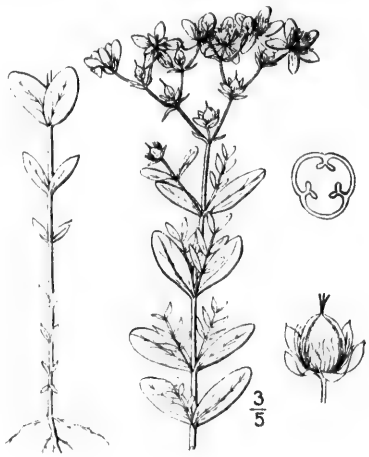
On rocky banks, southwestern Ohio to Iowa, south to Alabama and Arkansas. July–Sept.

8. Hypericum dolabrifórme Vent. Straggling St. John's-wort. (Fig. 2451.)

Hypericum dolabriforme Vent. Hort. Cels. *pl. 45.* 1800.

Straggling and branching, decumbent, 6′–20′ high; branchlets slightly angled. Leaves linear or linear-lanceolate, 8″–20″ long, 1″–2″ wide, acute or obtusish, spreading or ascending, with smaller ones clustered in the axils; cymes terminal, leafy, few–several-flowered; pedicels about ½″ long; flowers nearly 1′ broad; sepals foliaceous, lanceolate or ovate, acute or acuminate, nearly or quite as long as the oblique pointed petals; stamens numerous, distinct; styles 3, united below; capsule ovoid-conical, coriaceous, 3″–4″ long, 1-celled; seeds rugose.

On dry hills, barrens of Kentucky and Tennessee. July-Aug.

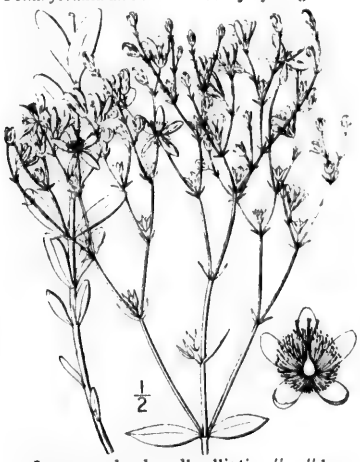


9. Hypericum ellípticum Hook. Elliptic-leaved or Pale St. John's-wort. (Fig. 2452.)

H. ellipticum Hook. Fl. Bor. Am. 1: 110. 1830.

Herbaceous, perennial; stem somewhat 4-angled, simple or with few branches, erect, 8′–20′ high. Leaves thin, spreading, elliptic or oval, obtuse, sessile, narrowed at the base or partly clasping, 8″–15″ long, 3″–5″ wide; cymes terminal, few-flowered, leafless but bracted; flowers pale yellow, nearly sessile, 5″–7″ broad; sepals spreading, oblong or oblanceolate, slightly shorter than the petals; styles 3, united below; stamens numerous; capsule ovoid-globose, 1-celled, about 2″ long; seeds striate; sepals and petals sometimes 4.

In swamps and along streams, Nova Scotia to Manitoba, Connecticut, northern New Jersey, Pennsylvania and Minnesota. July-Aug.



10. Hypericum virgàtum Lam. Virgate or Copper-colored St. John's-wort. (Fig. 2453.)

Hypericum virgatum Lam. Encycl. 4: 158. 1797.
H. angulosum Michx. Fl. Bor. Am. 2: 78. 1803.

Slender, herbaceous, erect or ascending, simple, or branched above, 1°–2½° high, the stem and branches 4-angled. Lower leaves ascending or erect, oblong-lanceolate, acute or obtusish, 8″–15″ long, 2″–4″ wide, sessile; cyme terminal, ample, compound, bracted, pedicels ½″–2″ long; flowers numerous, copper-yellow, alternate, 4″–6″ broad; sepals foliaceous, ovate or lanceolate, keeled, more or less shorter than the petals; styles 3, distinct; stigmas capitate; capsule 1-celled, ovoid, 2″ long, enclosed by the sepals.

In low grounds, Delaware to Illinois, south to Florida. July-Sept.

Hypericum virgàtum ovalifolium Britton, Trans. N. Y. Acad. Sci. 9: 10. 1889.

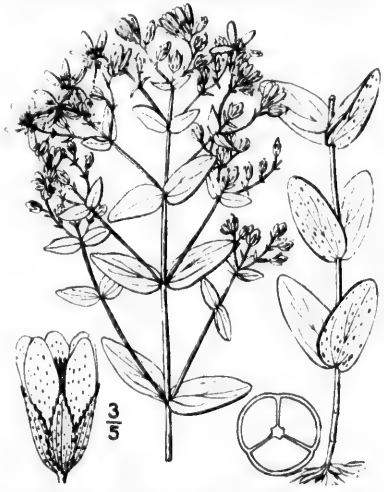
Leaves oval or broadly elliptic, 2″–10″ long, 1½″–7″ wide, erect, appressed, very obtuse. Pine-barrens of New Jersey.

11. Hypericum perforàtum L. Common St. John's-wort. (Fig. 2454.)

Hypericum perforatum L. Sp. Pl. 785. 1753.

Perennial, herbaceous from a woody base, 1°–2° high, much branched. Stems erect, with numerous barren shoots at base; leaves sessile, oblong or linear, 5″–10″ long, 1″–4″ wide, obtuse, more or less black-dotted; cymes terminal, several-many-flowered; flowers bright yellow, 8″–12″ broad; sepals lanceolate, acute, shorter than the copiously black-dotted petals; stamens numerous, united at their bases into 3 sets; styles 3; capsule ovoid, 2″–3″ long, completely 3-celled, glandular.

In fields and waste places, common throughout our area except the extreme north, and in the Southern States. Naturalized from Europe. Often a troublesome weed. Native also of northern Asia. June–Sept. English names, Amber, Penny-John, Rosin Rose, Herb-John. Crushed herbage odorous.

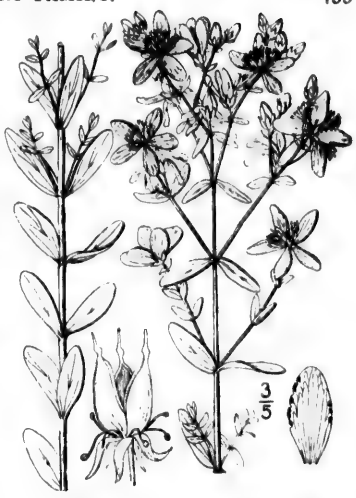


13. Hypericum gravèolens Buckley. Mountain St. John's-wort. (Fig. 2456.)

Hypericum graveolens Buckley, Am. Journ. Sci. **45**: 174. 1843.

Herbaceous, perennial, similar to the preceding species. Stem erect, 1°–3° high, branched above; leaves oval, ovate or elliptic-oblong, sessile or clasping, obtuse, 1′–3′ long, ½′–1′ wide, sparingly black-dotted; cymes terminal, few-several-flowered; pedicels 1″–4″ long; flowers usually crowded, 1′ in breadth or more; sepals lanceolate, acute, much shorter than the sparingly dotted or dotless petals; stamens united in sets; styles 3; capsule ovoid, somewhat 3-lobed, 3-celled, 4″–6″ long.

Mountains of southwestern Virginia and North Carolina. June–Sept.

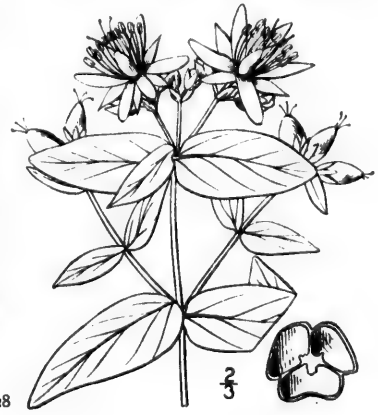


12. Hypericum maculàtum Walt. Spotted or Corymbed St. John's-wort. (Fig. 2455.)

H. maculatum Walt. Fl. Car. 189. 1788.
Hypericum corymbosum Muhl.; Willd. Sp. Pl. **3**: 1457. 1803.

Herbaceous, perennial from a woody base, erect, 1½°–3° high. Leaves sessile, short-petioled, or partly clasping, oblong or ovate-lanceolate, obtuse, 1′–3′ long, 4″–8″ wide, copiously black-dotted; cymes terminal, many-flowered; pedicels about 1″ long; flowers much crowded, 4″–7″ broad; sepals ovate, acute, generally much shorter than the conspicuously black-dotted petals; stamens numerous, united in 3 or 5 sets; styles 3, variable in length; capsule ovoid, 2″–3″ long, completely 3-celled.

In moist soil, Maine and Ontario to Minnesota, south to Florida and Texas. July–Sept.



14. Hypericum boreàle (Britton) Bicknell. Northern St. John's-wort. (Fig. 2457.)

Hypericum Canadense var. *boreale* Britton, Bull. Torr. Club, **18**: 365. 1891.
H. boreale Bicknell, Bull. Torr. Club, **22**: 213. 1894.

Annual, stem terete or slightly 4-angled, upright from a usually assurgent base, simple or branched, 1′–18′ high. Leaves elliptic, oval, oblong, or linear-oblong, 3″–16″ long, 1″–4″ wide, sessile or slightly clasping, obtuse, mostly 3-nerved, those of the lower part of the stem commonly much smaller than the upper and closer together; cymes few-several-flowered, leafy-bracted; flowers about 2½″ broad; sepals narrow, obtuse; capsules oblong, obtuse or obtusish, apiculate, 2″–2½″ long, purple, cross-wrinkled, longer than the sepals; seeds 3–5 times as long as wide, pale, longitudinally furrowed and finely cross-lined.

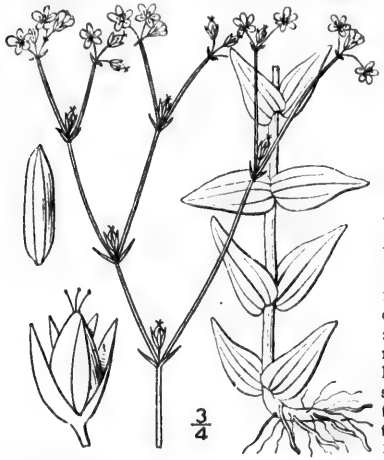
In wet soil, Newfoundland to New Jersey and Pennsylvania. July–Sept.

15. Hypericum mùtilum L. Dwarf or Small-flowered St. John's-wort. (Fig. 2458.)

Hypericum mutilum L. Sp. Pl. 787. 1753.
Ascyrum Crux-Andreae L. Sp. Pl. 787. 1753.

Annual, slender, erect or ascending, generally tufted, abundantly branched, 6′–2½° high. Branchlets 4-angled; leaves oblong or ovate, sessile, clasping, obtuse, 4″–14″ long, 2″–7″ wide, 5-nerved at the base; cymes many-flowered, terminal, subulate-bracted; pedicels slender, 1″–6″ long; flowers ½″–2″ broad, light orange yellow; sepals foliaceous, linear, lanceolate or oblanceolate, much shorter than or slightly longer than the petals; stamens 5–12; styles 3; capsule ovoid, pointed, 1-celled, 1″–2″ long, somewhat longer than the sepals.

In low grounds, Nova Scotia to Manitoba, Florida and Texas. Ascends 3000 ft. in Virginia. July–Sept.



16. Hypericum gymnánthum Engelm. & Gray. Clasping-leaved St. John's-wort. (Fig. 2459.)

Hypericum gymnanthum Engelm. & Gray, Bost. Journ. Nat. Hist. **5**: 212. 1847.
Hypericum mutilum var. *gymnanthum* A. Gray, Man. Ed. 5. 86. 1867.

Annual, erect, simple or sparingly branched, 10′–3° high. Leaves ovate, or the lower oval, cordate-clasping, often distant, 4″–10″ long, 2″–4″ wide, acute, or the lower obtuse, 3–7-nerved at the base; cymes terminal, loose, subulate-bracted; flowers numerous, 1″–2″ broad; sepals lanceolate, acuminate, equalling or shorter than the petals and generally somewhat shorter than the 1-celled ovoid capsule; styles 3; stamens 10–12; capsule about 2″ long.

In low grounds, southwestern New Jersey and Delaware to Minnesota, south to Louisiana and Texas. July–Sept.

17. Hypericum màjus (A. Gray) Britton. Larger Canadian St. John's-wort. (Fig. 2460.)

Hypericum Canadense var. *majus* A. Gray, Man. Ed. 5, 86. 1867.
Hypericum majus Britton, Mem. Torr. Club, 5: 225. 1894.

Annual, stouter than *H. Canadense*, stem erect, 1°–3° high, usually branched above, the branches nearly erect. Leaves lanceolate or oblong-lanceolate, sessile or somewhat clasping, 10″–2½′ long, 3″–6″ wide, acute or obtuse at the apex, 5–7-nerved; cymes several–many-flowered; bracts subulate; flowers 3″–5″ broad; sepals lanceolate, acuminate, about as long as the petals or shorter; styles 3; capsule narrowly conic, acute, 4″–5″ long, longer than the sepals; seeds minute, cross-lined and faintly longitudinally striate.

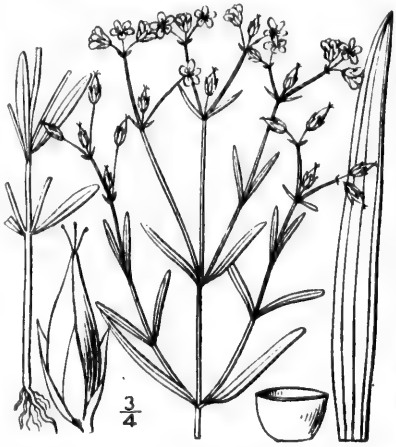
In moist soil, Maine to Michigan, New Jersey and Nebraska. June–Sept.

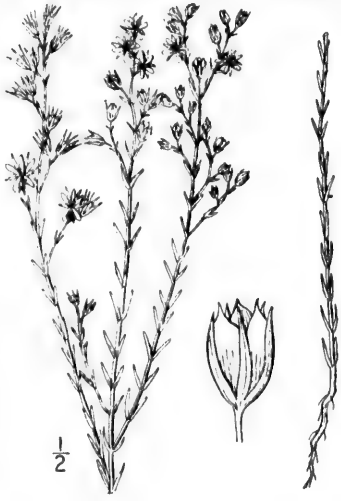
18. Hypericum Canadénse L. Canadian St. John's-wort. (Fig. 2461.)

Hypericum Canadense L. Sp. Pl. 785. 1753.

Annual, erect, 6′–20′ high, freely branching. Branches angular, erect or ascending; leaves linear, 6″–2′ long, 1″–2″ wide, obtuse, tapering to the base, 3-nerved; cymes terminal, several–many-flowered, subulate-bracted; flowers 2″–3″ broad; sepals lanceolate, acute, equalling or shorter than the petals; stamens 5–10; styles 3; capsule 1-celled, narrowly conic, acute, 2″–4″ long, longer than the sepals; seeds striate.

In wet sandy soil, Newfoundland to Manitoba, Georgia, Kentucky and Wisconsin. Ascends to 5000 ft. in North Carolina. July–Sept.





19. Hypericum Drummóndii (Grev. & Hook.) T. & G. Drummond's St. John's-wort. (Fig. 2462.)

Sarothra Drummondii Grev. & Hook. Bot. Misc. 3: 236. 1833.
Hypericum Drummondii T. & G. Fl. N. A. 1: 165. 1838.

Annual, bushy-branched, 10′–30′ high, rigid. Leaves linear-subulate, 4″–12″ long, erect or narrowly ascending, ½″ wide, 1-nerved; flowers scattered along the upper part of leafy branches, numerous, peduncled, 2″ broad; sepals lance-linear, longer than the petals; stamens 10–20; styles 3; capsule 1-celled, ovoid, 2″ long, equalling or shorter than the sepals; seeds large, rugose.

In dry soil, Illinois to Georgia, west to Iowa and Texas. July–Sept.

3. SARÒTHRA L. Sp. Pl. 272. 1753.

A low annual much-branched herb, the opposite leaves reduced to subulate scales, the mostly opposite branches erect-ascending, the very small yellow flowers alternate, very short-pedicelled or sessile along them in the axils of still smaller scales. Sepals 5, equal. Petals 5. Stamens 5–10. Styles 3, separate. Capsule elongated-conic, 1-celled, much longer than the sepals; seeds minutely striate and pitted. [Greek, a broom.]

A monotypic genus of eastern North America.

1. Sarothra gentianoides L. Orange-grass. Pine-weed. (Fig. 2463.)

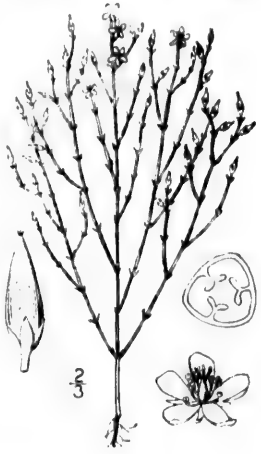
Sarothra gentianoides L. Sp. Pl. 272. 1753.

Hypericum nudicaule Walt. Fl. Car. 190. 1788.

Hypericum Sarothra Michx. Fl. Bor. Am. 2: 79. 1803.

Annual, erect, fastigiately branched, 4′–20′ high. Branches mainly opposite, filiform, erect, wiry; leaves minute, subulate, about 1″ long, appressed; flowers nearly sessile, 1″–1½″ long, open in sunlight; sepals linear, about equalling the petals and much shorter than the conic-cylindric acute purple pod; seeds very small.

In sandy soil, Maine to Florida, west to Minnesota, Missouri and Texas. June–Oct. Called also Ground Pine and Nit-weed.



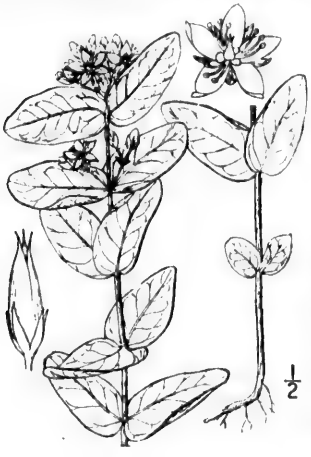
4. TRIADÈNUM Raf. Med. Rep. (II.) 5: 352. 1808.

[ELODEA Pursh, Fl. Am. Sept. 360. 1814. Not Michx. 1803, nor *Elodes* Adans. 1763.]

Perennial marsh herbs, with opposite entire oblong oval or ovate leaves, and pink or greenish purple flowers in terminal cymes, or also axillary. Calyx of 5 equal persistent sepals. Petals 5, not contorted. Stamens 9, or sometimes more, in 3 sets, the sets alternating with 3 large hypogynous glands. Ovary 3-celled; styles 3. Capsule oblong-conic, much longer than the sepals. [Greek, three glands.]

Two species, natives of eastern North America.

Leaves sessile; flower-clusters peduncled. 1. *T. Virginicum.*
Leaves short-petioled; flower-clusters nearly sessile. 2. *T. petiolatum.*



1. Triadenum Virginicum (L.) Raf. Marsh St. John's-wort. (Fig. 2464.)

Hypericum Virginicum L. Sp. Pl. Ed. 2, 1104. 1763.
Hypericum campanulatum Walt. Fl. Car. 191. 1788.
Elodea campanulata Pursh, Fl. Am. Sept. 379. 1814.
Elodea Virginica Nutt. Gen. 2: 17. 1818.
Triadenum Virginicum Raf. Fl. Tell. 3: 79. 1836.

Perennial, erect or ascending, nearly simple, 1°–1½° high. Leaves sessile or cordate-clasping, ovate or oblong, 1′–2½′ long, 9″–12″ wide, very obtuse, sometimes emarginate, glaucous beneath, black-dotted; flowers 6″–8″ broad, in axillary and terminal peduncled leafy clusters; sepals ovate or lanceolate, acute, shorter than the straight petals; stamens 9 or more, united in 3 sets; styles 3, distinct; capsule oblong, 4′–5″ long, acute, red-purple.

In swamps, Labrador and Nova Scotia to Florida, west to Manitoba, Nebraska and Louisiana. Also in northeastern Asia. Ascends to 2600 ft. in the Catskills. July–Sept.

2. Triadenum petiolàtum (Walt.) Britton. Larger Marsh St. John's-wort. (Fig. 2465.)

Hypericum petiolatum Walt. Fl. Car. 191. 1788.

Elodea petiolata Pursh, Fl. Am. Sept. 379. 1814.

Similar to the preceding species, but often more branched and taller; leaves generally longer (2′–5′), petioled, or the upper sessile, not clasping, pale beneath; flower-clusters axillary and terminal, sessile or very short-peduncled.

In swamps, New Jersey and Maryland to Florida, west to Arkansas and Louisiana. July–Aug.

Family 77. **ELATINÀCEAE** Lindl. Nat. Syst. Ed. 2, 88. 1836.

WATER-WORT FAMILY.

Low herbs, sometimes woody in tropical regions, with opposite or verticillate stipulate entire or serrate leaves, and small axillary solitary or fascicled flowers. Flowers regular, perfect. Sepals 2–5, imbricated. Petals the same number, hypogynous. Stamens the same number or twice as many. Ovary 2–5-celled; styles 2–5, stigmatic at the apex; ovules ∞, anatropous. Capsule with septicidal dehiscence. Placentae central. Seed-coat crustaceous, rugose or ribbed.

About 25 species, of wide geographic distribution.

Flowers 2–4-merous; glabrous aquatic or creeping herbs. 1. *Elatine.*
Flowers mainly 5-merous; pubescent ascending or diffuse herbs. 2. *Bergia.*

1. **ELATÌNE** L. Sp. Pl. 367. 1753.

Small glabrous or glabrate aquatic or creeping herbs, with opposite or verticillate leaves, and minute axillary mainly solitary flowers. Sepals 2–4, persistent, membranous, not ribbed. Petals of the same number, hypogynous. Stamens of the same number or twice as many. Styles or stigmas 2–4. Pod membranous, globose, 2–4-valved. Seeds ∞, straight, or slightly curved, striate longitudinally and transversely. [Greek, fir-like, with reference to the leaves.]

About 9 species, natives of temperate and warm regions. In addition to the following, another occurs in California.

Petals and stamens 2; seeds distinctly sculptured.
Leaves obovate; seeds with 9–10 longitudinal and 20–30 transverse striae. 1. *E. Americana.*
Leaves oblong or oval; seeds with 6–7 longitudinal and 10–12 transverse striae. 2. *E. brachysperma.*
Petals and stamens mostly 3; seeds little sculptured. 3. *E. triandra.*

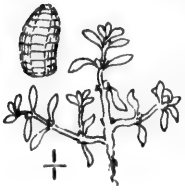
1. Elatine Americàna (Pursh) Arn. Water-wort. Mud-purslane. (Fig. 2466.)

Peplis Americana Pursh, Fl. Am. Sept. 238. 1814.
Elatine Americana Arn. Edinb. Journ. Sci. 1: 430. 1830.

Erect or spreading, tufted, aquatic or terrestrial, ½′–1½′ long, often submerged. Leaves obovate, obtuse, 1″–3″ long, 1″ wide or less; flowers sessile, axillary, minute, rarely opening in the submerged forms; sepals, petals, stamens and stigmas 2 (rarely 3 in the terrestrial forms); capsule globose, nearly ½″ in diameter; seeds ¼″ to nearly ½″ long, slightly curved, marked by 9–10 longitudinal striae and 20–30 cross-bars.

Margins of ponds and slow streams, Ontario and New Hampshire to Illinois, south to Virginia and Texas. Also in Colorado and Oregon. Summer.

2. Elatine brachyspérma A. Gray. Short-seeded Water-wort. (Fig. 2467.)

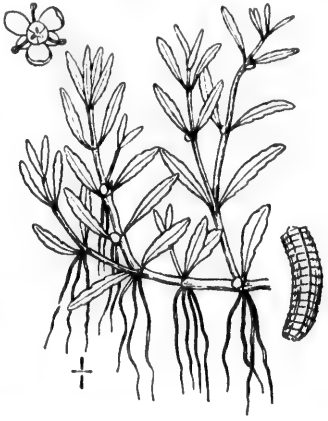


Elatine brachysperma A. Gray, Proc. Am. Acad. 13: 361. 1878.

Terrestrial or sometimes submerged, spreading, tufted, 1′–2′ long. Leaves oblong, oval or lanceolate, narrowed at the base, 2″–3″ long, about 1″ wide, obtuse; flowers sessile, axillary, minute; sepals, petals, stamens and stigmas mainly 2; capsule nearly as in the preceding species; seeds short-oblong, nearly straight, about ¼″ long, marked by 6–7 longitudinal striae and 10–12 cross-bars.

Margins of ponds, Illinois and California, doubtless occurring between these limits. Summer.

3. Elatine triándra Schk. Long-stemmed Water-wort. (Fig. 2468.)



Elatine triandra Schk. Bot. Hand. 1: 345. 1791.

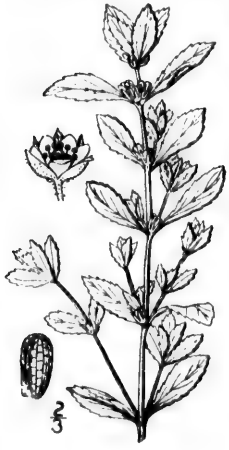
Flaccid, tufted, immersed or creeping, stems 2′–4′ long, much branched. Leaves oblong or oblanceolate, very thin, obtuse, 2″–4″ long, 1″ wide, narrowed at the base; flowers minute, axillary, sessile; sepals commonly 2; petals, stamens and stigmas 3; seeds slightly curved, about the size of those of *E. Americana*, slightly marked longitudinally and transversely.

Ponds, Illinois and Nebraska. Also in Europe. Summer.

2. BÉRGIA L. Mant. 1: 152. 1771.

Herbs, or somewhat shrubby plants, branching, erect, ascending or prostrate, more or less pubescent, with opposite serrate or entire leaves, and small axillary solitary or clustered flowers. Parts of the flower in 5's (very rarely in 4's or 3's). Sepals acute. Pod crustaceous, ovoid, 5-valved. Seeds numerous, striate longitudinally and transversely. [In honor of Dr. P. J. Bergius, 1723–1790, professor of Natural History in Stockholm.]

About 15 species, natives of warm and temperate regions.



1. Bergia Texàna (Hook.) Seub. Texas Bergia. (Fig. 2469.)

Merimea Texana Hook. Icon. Pl. *pl. 278.* 1840.

Bergia Texana Seub.; Walp. Rep. 1: 285. 1842.

Prostrate or ascending, diffusely branched, pubescent, stems 6′–10′ long. Leaves spatulate or obovate, 1′–1½′ long, 6″–8″ wide, acutish or obtuse, serrate, narrowed into a short petiole; stipules scarious, about 1″ long, ciliate-serrulate; flowers short-peduncled, about 1½″ broad, solitary or 2–3 together in the axils; sepals ovate, acuminate, denticulate, slightly longer than the oblong obtuse petals; capsule globose, 1″ in diameter, its dehiscence septifragal; seeds oblong, striate longitudinally and cross-barred.

Southern Illinois to Texas, west to Nevada and California. Summer.

Family 78. **CISTÀCEAE** Lindl. Nat. Syst. Ed. 2, 91. 1836.

ROCK-ROSE FAMILY.

Shrubs or low woody herbs, with alternate or opposite simple leaves, and solitary racemose clustered or paniculate flowers. Flowers regular, generally perfect. Sepals 3–5, persistent, when 5 the 2 exterior ones smaller and bract-like, the 3 inner convolute. Petals 5 or 3, or sometimes wanting, fugacious. Stamens ∞, hypogynous. Ovary 1, sessile, 1–several-celled; ovules orthotropous, stalked; style simple; stigma entire or 3-lobed. Capsule dehiscent by valves. Seeds several or numerous; embryo slender, straight or curved; endosperm starchy or fleshy.

Four genera and about 160 species, all but 1 or 2 natives of the northern hemisphere.

Petals 5, yellow, fugacious, or wanting.
  Leaves broad, lanceolate or oblong. 1. *Helianthemum.*
  Leaves subulate or scale-like, imbricated; style long. 2. *Hudsonia.*
Petals 3, not yellow, persistent; flowers minute; style none. 3. *Lechea.*

1. **HELIÁNTHEMUM** Pers. Syn. 2: 75. 1807.

Woody herbs or low shrubs, more or less branching, mostly with showy yellow flowers, and sometimes (in the following species) with other smaller apetalous ones. Petals in the larger flowers large, fugacious. Stamens numerous. Placentae or false septa 3. Ovules few or ∞; style short, or filiform, or club-shaped, jointed with the ovary; stigma capitate or 3-lobed. Embryo curved. [Greek, sun-flower.]

About 125 species, natives of North and Central America, the Mediterranean region, India, and a few in South America. Besides the following, about 8 others occur in the Southern States and on the Pacific Coast. Some of the species are known as Rock-rose or Sun-rose.

Petaliferous flowers solitary, few or several; apetalous flowers in axillary sessile clusters.
  Petaliferous flowers 5–12, in a short terminal cymose raceme, their capsules 1½″–2″ long, little, if at all, overtopped by the short later axillary branches; capsules of the apetalous flowers about 1″ in diameter. 1. *H. majus.*
  Petaliferous flowers solitary, rarely 2, their capsules 3″–4″ long, much overtopped by the later elongated axillary branches; capsules of the apetalous flowers nearly 2″ in diameter. 2. *H. Canadense.*
Flowers all cymose at the summit of the stem, the petaliferous ones slender-pedicelled. 3. *H. corymbosum.*

1. **Helianthemum màjus** (L.) B.S.P. Hoary Frostweed. (Fig. 2470.)

Lechea major L. Sp. Pl. 90. 1753

Helianthemum majus B.S.P. Prel. Cat. N. Y. 6. 1888.

Hoary-canescent, stem erect, 1°–2° high, at first simple, later with numerous short ascending branches. Leaves oblong-lanceolate or oblanceolate, acute or obtuse, 8″–18″ long, stellate-canescent beneath, darker above, short-petioled; petaliferous flowers 5–12 in a terminal cymose raceme, their corollas 7″–12″ broad, light yellow, their sepals densely canescent, the outer nearly as long as the inner, their capsules ovoid, 1¼″–2″ long, little if at all overtopped by the later axillary branches; apetalous flowers appearing later, minute, clustered in the axils, nearly sessile, their capsules about 1″ in diameter; seeds evenly reticulated.

In dry soil, Maine to Minnesota and South Dakota, south to North Carolina and Texas. Petaliferous flowers June–July.

2. Helianthemum Canadénse (L.) Michx. Long-branched Frostweed. Frost-wort. (Fig. 2471.)

Cistus Canadensis L. Sp. Pl. 526. 1753.
Helianthemum Canadense Michx. Fl. Bor. Am. 1: 308. 1803.

Puberulent-canescent, erect, ascending, or sometimes diffuse, 3′–2° high, stem at first simple, later with slender elongated branches. Leaves oblong, linear-oblong or oblanceolate, nearly sessile, 6″–15″ long, 2″–4″ wide, rough and dark green above, paler and canescent beneath, the margins commonly revolute in drying; petaliferous flowers solitary, or rarely 2, bright yellow, 9″–15″ broad, their sepals pilose, the outer shorter than the inner, their capsules ovoid or obovoid, rounded above, 3″–4″ long, much overtopped by the later elongating axillary branches; apetalous flowers appearing later, axillary, nearly sessile, their capsules about 2″ in diameter; seeds papillose.

In dry rocky or sandy soil, Maine to Indiana and Wisconsin, south to North Carolina and Kentucky. Petaliferous flowers May–July. In late autumn crystals of ice sometimes shoot from the base of the stem in this and the preceding species, whence the popular name Frost-weed. Called also Canadian Rock Rose.

3. Helianthemum corymbòsum Michx. Pine-barren Frostweed. (Fig. 2472.)

Helianthemum corymbosum Michx. Fl. Bor. Am. 1: 307. 1803.

Erect, branching from the base, 6′–12′ high, finely and densely canescent. Leaves oblong, or the lowest obovate, 10″–16″ long, obtuse or acutish, 3″–5″ wide, entire, slightly revolute in drying, pale beneath, dark green above, short-petioled; flowers in nearly naked, fastigiate cymes at the summits of the stem and branches; the petaliferous 6″–10″ broad, on slender pedicels 6″–8″ long; apetalous flowers clustered, nearly sessile; calyx of both kinds woolly-pubescent; outer sepals about equalling the inner; capsules of the larger flowers 2″–3″ broad, many-seeded; those of the apetalous ones smaller and few-seeded.

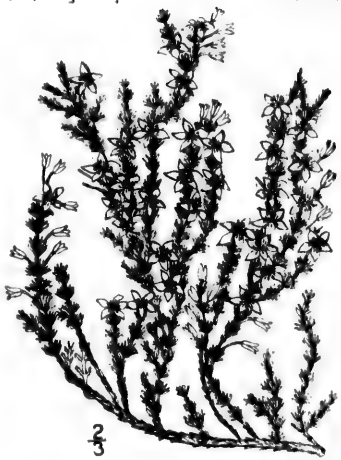
In sandy soil, Virginia (?), North Carolina to Florida and Louisiana. Reported from New Jersey, but specimens so-called prove to be *H. Canadense*.

2. HUDSÒNIA L. Mant. 11. 1767.

Low tufted diffusely branched shrubs, with small subulate or scale-like, imbricated leaves, and numerous yellow flowers terminating short branches. Petals 5, obovate-oblong. Stamens ∞. Style filiform, continuous with the ovary; placentae 3; stigma minute. Capsule 3-valved, included in the calyx. Seeds few; embryo slender, spirally curved. [Named for Wm. Hudson, 1730–1793, an English botanist.]

A genus of 3 species, natives of eastern North America, one inhabiting mountain tops in North Carolina. Plants of heath-like aspect, very showy when in bloom.

Flowers slender-pedicelled; leaves subulate. 1. *H. ericoides.*
Flowers nearly sessile; leaves scale-like. 2. *H. tomentosa.*

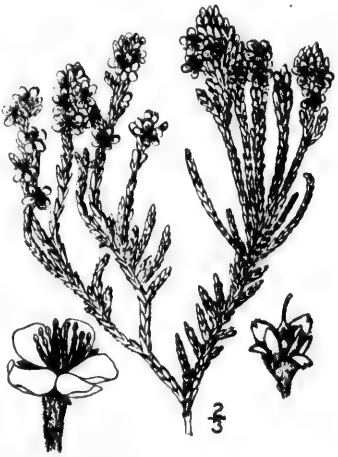


1. Hudsonia ericoides L. Heath-like Hudsonia. (Fig. 2473.)

Hudsonia ericoides L. Mant. 1: 74. 1767.

Bushy-branched from the base, greenish, softly-pubescent throughout, 4′–7′ high, the principal branches slender, ascending. Leaves subulate, 3″–4″ long, somewhat spreading, densely imbricated on the younger branches, more scattered on the older ones; pedicels very slender, 5″–8″ long; flowers numerous, about 4″ broad; sepals 2″–3″ long, acutish; stamens 12–18; capsule oblong, slightly pubescent; seeds about 3.

In dry sandy soil, especially in pine-barrens, mainly near the coast, Nova Scotia to Virginia. Also at North Conway, N. H. (Miss Minns). May–June.



2. Hudsonia tomentòsa Nutt. Woolly Hudsonia. False Heather. Beach Heather. (Fig. 2474.)

Hudsonia tomentosa Nutt. Gen. 2: 5. 1818.

Densely tufted and intricately branched, matted, hoary-pubescent, pale, 4′–8′ high; branches stout, ascending. Leaves 1″ long, oval or oblong, densely imbricated and appressed; flowers sessile, or on pedicels less than 1″ long, numerous, slightly smaller than those of the preceding species; sepals obtuse; stamens 9–18; capsules ovoid, glabrous, usually 1-seeded.

In sands of the seashore and in pine-barrens, Maryland to New Brunswick, and on lake and river shores west to Slave Lake and the Lake of the Woods. May–July. Called also Poverty Grass.

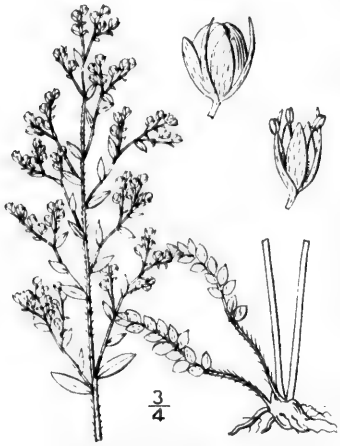
3. LÉCHEA L. Sp. Pl. 90. 1753.

Perennial branching herbs, often woody at the base, with small entire leaves and minute panicled greenish or purplish flowers. Sepals 5, the 2 outer smaller and narrower. Petals 3, ovate to linear, inconspicuous, persistent. Stamens 3–12. Stigmas 3, nearly sessile, laciniate, prominent when the plant is in flower. Capsule 3-valved, 3-celled, or by obliteration of the dissepiments 1-celled, about 6-seeded. Embryo curved or spiral. [Named for Johan Leche, a Swedish botanist, died 1764.]

A genus about of 14 species, 11 of them natives of eastern North America, 1 Texan, 1 Cuban and 1 Mexican. Species indiscriminately known as Pin-weeds. The characteristic basal shoots appear late in the season.

Leaves of the basal shoots oblong or ovate, not more than 3 times as long as broad.
- Outer sepals longer than the inner; panicle very leafy. — 1. *L. minor.*
- Outer sepals equalling or shorter than the inner.
  - Pod oblong; pedicels slender, 1″–2″ long. — 2. *L. racemulosa.*
  - Pod globose; pedicels about ½″ long.
    - Erect, villous-pubescent. — 3. *L. villosa.*
    - Ascending, bushy-branched, tomentose-canescent. — 4. *L. maritima.*

Leaves of the basal shoots lanceolate or linear, usually more than 3 times as long as broad.
- Stem-leaves narrowly linear; inner sepals 1-nerved. — 5. *L. tenuifolia.*
- Stem-leaves oblong-linear; inner sepals 3-nerved.
  - Plants green, more or less pubescent.
    - Pod obovoid, ½″ in diameter; panicle-branches ascending or spreading. — 6. *L. Leggettii.*
    - Pod globose, about 1″ in diameter; panicle-branches nearly erect, loosely flowered; flowers slender-pedicelled. — 7. *L. intermedia.*
    - Pod oval, about ⅛″ in diameter; panicle-branches erect-ascending, densely flowered; flowers short-pedicelled. — 8. *L. juniperina.*
  - Plant pale, canescent; pod globose, ⅛″ in diameter. — 9. *L. stricta.*

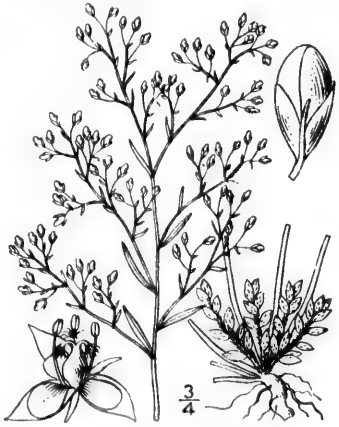


1. Lechea minor L. Thyme-leaved Pin-weed. (Fig. 2475.)

Lechea minor L. Sp. Pl. 90. 1753.
Lechea thymifolia Michx. Fl. Bor. Am. 1: 77. 1803.
Lechea Novae-Caesareae Aust.; A. Gray, Man. Ed. 5, 81. 1867.

Erect, 6′–2° high, freely branching above, more or less pilose-pubescent with appressed hairs throughout. Branches slender, erect or ascending; stem-leaves oval or oblong, 4″–7″ long, 2″–3″ wide, acutish or obtuse, ciliate, the upper smaller than the lower; petioles 1″ long; leaves of the basal shoots oval or oblong, obtuse, 3″–5″ long, 2¼″–3″ wide; panicle very leafy; flowers close together, somewhat secund; outer sepals longer than the inner and longer than the obovoid or globose pod.

In dry open grounds, eastern Massachusetts to Michigan, south to Florida and Louisiana. Petals red-purple. Aug.-Sept.

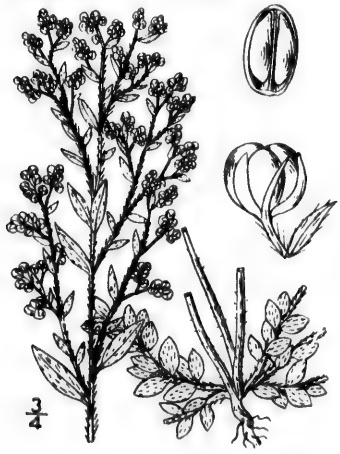


2. Lechea racemulòsa Michx. Oblong-fruited Pin-weed. (Fig. 2476.)

Lechea racemulosa Michx. Fl. Bor. Am. 1: 77. 1803.

Erect, 6′–18′ high, freely branching above, slightly pilose-pubescent throughout with appressed hairs. Branches slender, divergent or ascending; leaves of the stem oblong or linear-oblong, obtuse or acutish, narrowed at the base, 4″–9″ long, 1½″–2″ wide; leaves of the basal shoots oval or oblong, 2″–4″ long, 1½″–3″ wide, obtuse; petioles about 1″ long; panicle sparsely leafy, its branches spreading or ascending; flowers on slender divergent pedicels 1″–2″ long; outer sepals equalling or shorter than the inner; pod oblong or ellipsoid.

In dry sandy and rocky soil, Martha's Vineyard to Indiana, Florida and Tennessee. Ascends to 4200 ft. in North Carolina. July-Aug.



3. Lechea villòsa Ell. Large or Hairy Pin-weed. (Fig. 2477.)

Lechea major Michx. Fl. Bor. Am. 1: 76. 1803. Not L. 1753.
Lechea villosa Ell. Bot. S. C. & Ga. 1: 184. 1817.

Erect, villous-pubescent with spreading hairs, 1°–2½° high, branching above, leafy. Branches rather stout, ascending; leaves of the stem oblong-elliptic, obtuse, but pointed, 8″–12″ long, 3″–5″ wide; petioles ¼″ long; leaves of the basal shoots oval or oblong, obtuse, 3″–4″ long, 2″–3″ wide; branches of the panicle ascending, the ultimate branchlets often recurved; pedicels ½″ long; flowers more or less secund-scorpioid, close together; outer sepals about equalling the inner; pod depressed-globose, ½″ in diameter.

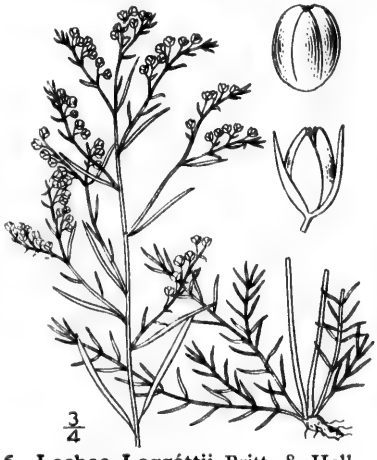
In dry soil, Massachusetts to southern Ontario and Nebraska, south to Florida and Texas. Petals greenish purple. July-Aug.

4. Lechea marítima Leggett. Beach Pin-weed. (Fig. 2478.)

Lechea thymifolia Pursh, Fl. Am. Sept. 91. 1814. Not Michx. 1803.
L. maritima Leggett in Britt. Prel. Cat. N. Y. 13. 1881.
L. minor var. *maritima* A. Gray, Man. Ed. 6, 77. 1890.

Densely tufted, branching from the base, stout, rigid, 6′–10′ high, tomentose-canescent with whitish hairs. Primary branches spreading or ascending, numerous; flowering branches slender, stiff, divergent, elongated; leaves of the stem linear or linear-oblong, blunt or acute, 4″–10″ long, 1″–2″ wide; leaves of the basal shoots oblong or ovate-oblong, mainly acute, 3″–4″ long, 1½″–2″ wide, densely canescent; pedicels ½″ long; flowers numerous, clustered; petals reddish; outer sepals shorter than the inner; pod globose, ½″ in diameter.

Sands of the seashore and in sandy pine-barrens, Massachusetts to Virginia, and Georgia (according to S. Watson). Also at the Crawford Notch, White Mts., N. H.



6. Lechea Leggéttii Britt. & Holl. Leggett's Pin-weed. (Fig. 2480.)

Lechea minor Lam. Tabl. Encycl. *pl. 52, f. 1.* 1791? Not L. 1753.
Lechea Leggettii Britt. & Holl. Prel. Cat. N. Y. 6. 1888.

Erect, rather slender, freely branching, more or less strigose-pubescent, 10′–2° high. Branches slender, spreading or ascending; leaves of the stem linear or linear-oblong, acute or obtuse, 5″–12″ long, ½″–1″ wide, sessile or nearly so; leaves of the basal shoots oblong-linear, 2″–3″ long, ½″ wide, acute; panicle open, its branches slender and divergent; inflorescence somewhat secund; pedicels ½″–1″ long; outer sepals nearly equalling the inner; capsule obovoid, ½″ in diameter.

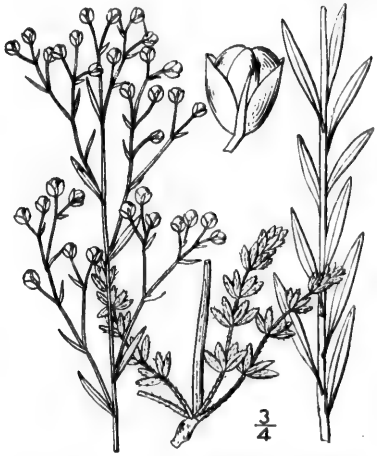
In dry open places, Long Island, N. Y., to Indiana, south to North Carolina. Leaves of the basal shoots full-grown in November. Petals brownish purple. July–Aug.

5. Lechea tenuifòlia Michx. Narrow-leaved Pin-weed. (Fig. 2479.)

Lechea tenuifolia Michx. Fl. Bor. Am. 1: 77. 1803.

Densely tufted, stems erect, slender, 4′–10′ high, divaricately branched above, minutely strigose-pubescent. Branches slender, elongated; leaves of the stem narrowly linear, or sometimes nearly filiform, 2″–7″ long, ½″ wide or less, acute, sessile, or very nearly so; leaves of the basal shoots linear, sessile, 3″–4″ long, about ½″ wide; pedicels 1″ long; flowers more or less secund, conspicuously bracted by the upper leaves; outer sepals equalling or exceeding the inner; pod globose-oval, ½″ in diameter, or slightly more.

In dry open places, eastern Massachusetts to Wisconsin, south to Florida and Texas. Petals red-purple. July–Aug.



7. Lechea intermèdia Leggett. Large-podded Pin-weed. (Fig. 2481.)

Lechea intermedia Leggett; Britton, Bull. Torr. Club, **21**: 252. 1894.

Erect, 8′–24′ high, branching above, sparingly strigose-pubescent. Branches erect or nearly so, short, slender; leaves of the stem oblong-linear, 6″–14″ long, 1″–2½″ wide, acute, nearly sessile, leaves of the basal shoots oblong-linear, shorter than those of the stem, 4″–5″ long, ½″ wide, somewhat larger than those of *L. Leggettii*; pedicels 1″–2″ long, slender; outer sepals about equalling the inner; capsule subglobose or depressed-globose, about 1″ in diameter.

In dry open places, especially in hilly or mountainous regions, Pennsylvania and New Jersey to New Brunswick, northern New York and Ontario. Root-leaves full-grown in October or November. Petals brownish purple. July–Aug.

8. Lechea junipérina Bicknell. Maine Pin-weed. (Fig. 2482.)

Lechea juniperina Bicknell, Bull. Torr. Club, **24**: 88. 1897.

Tufted, 4′–20′ high, finely hoary to canescent. Branches short, ascending or erect, leafy, forming a dense narrow panicle; stem-leaves numerous, ascending or appressed, glabrous, except the midrib and margins, linear-oblong to oblanceolate, 5″–10″ long, 1″–2″ wide; flowers numerous, crowded; pedicels ½″–1½″ long; fruiting calyx ovoid-ellipsoid, ¾″ long; inner sepals elliptic, nerveless or faintly 3-nerved, often deep purple, the outer shorter, bright green; leaves of basal shoots oblong or elliptic, 2″–3″ long, ½′–1″ wide.

Coast of Maine. Aug. Petals brownish red. The basal shoots do not appear until September.

9. Lechea stricta Leggett. Bushy or Prairie Pin-weed. (Fig. 2483.)

Lechea stricta Leggett; Britton, Bull. Torr. Club, **21**: 251. 1894.

Erect, 12′–16′ high, densely and fastigiately branched, densely strigose-canescent, pale, very bushy. Branches slender, ascending or nearly erect; leaves of the stem linear-oblong, 6″–12″ long, ¼″–1″ wide, acute or bluntish; leaves of the basal shoots linear-oblong, much smaller than those of the stem, 2″–3″ long, ⅛″ wide or less, acute; pedicels slender, 1″–1½″ long; outer sepals shorter than or equalling the inner; capsule subglobose to oval, ¼″ in diameter.

In open dry places, Wisconsin, Illinois, Iowa. July–Aug.

Family 79. **VIOLÀCEAE** DC. Fl. Franc. 4: 801. 1805.

VIOLET FAMILY.

Herbs or shrubs, with alternate or basal (rarely opposite) simple entire lobed or laciniate stipulate leaves, and solitary or clustered flowers. Sepals 5, equal or unequal. Flowers perfect, mostly irregular. Petals 5, hypogynous, imbricated in the bud, the lower one generally larger or spurred. Perfect stamens 5, hypogynous; anthers erect, connivent in a ring, or syngenesious, sessile or on short filaments. Ovary 1, 1-celled; placentae 3, parietal; style simple; stigma generally oblique. Capsule dehiscent by valves (except in some tropical genera with berry-like fruit). Seeds anatropous, with a crustaceous testa; embryo mainly straight, in copious endosperm.

About 15 genera and 300 species, of wide distribution.

Sepals more or less prolonged posteriorly. 1. *Viola.*
Sepals not prolonged posteriorly.
  Petals nearly equal; stamens syngenerious. 2. *Cubelium.*
  Petals very unequal; anthers only connivent. 3. *Calceolaria.*

1. **VIOLA** L. Sp. Pl. 933. 1753.

Herbs, with alternate or basal leaves, and axillary or scapose solitary (rarely 2) flowers. Flowers mainly of 2 kinds, the early ones petaliferous, showy and often sterile, long-scaped, or peduncled, the later ones produced on runners, stolons, or shorter peduncles, apetalous or cleistogamous and abundantly fertile. Sepals of the petaliferous flowers nearly equal, more or less prolonged posteriorly; petals spreading, the lower one larger, spurred or saccate; stamens 5, the two infe. r ones spurred. Capsule elastically dehiscent into 3 valves. Seeds ovoid-globose. [The L. name.]

About 150 species, widely di ibuted. Besides the following, some 25 others occur in the southern and western parts of North America. All are normally spring-flowering, but many bloom a second time in autumn, and the cleistogamous flowers are sometimes imperfectly petaliferous.

* **Acaulescent, the leaves and scapes arising from rootstocks; sometimes stoloniferous late in the season.**

† Rootstocks thick, short, scaly, erect, oblique or horizontal.

Petals blue, purple or violet, varying to white.
  Petals, at least the lateral ones, bearded toward the base.
    Leaves, at least the later ones, lobed or parted.
      Leaves, at least the later ones, variously lobed, the middle lobe and also the lateral ones usually broad. 1. *V. palmata.*
      Leaves thin, subpedately parted into linear or oblanceolate acute lobes; eastern. 2. *V. Atlantica.*
      Leaves thick, all pedately parted into linear obtuse lobes; western. 3. *V. pedatifida.*
    Leaves merely crenate or dentate, none lobed, the base sometimes incised.
      Leaves reniform, orbicular or broadly ovate; pods of cleistogamous flowers on horizontal peduncles.
        Glabrous, or with a few scattered hairs. 4. *V. obliqua.*
        Villous or pubescent.
          Leaves usually appressed to the ground; hairs appressed. 5. *V. villosa.*
          Leaves usually ascending; pubescence villous. 6. *V. sororia.*
      Leaves, at least the later ones, lanceolate, oval or ovate; pods of cleistogamous flowers on erect peduncles.
        Leaf-blades lanceolate, usually much longer than the petioles, the base mostly incised. 7. *V. sagittata.*
        Leaf-blades ovate, oval or ovate-lanceolate, usually not longer than the petioles; plant mostly villous. 8. *V. ovata.*
  Petals all beardless.
    Leaves pedately parted; plant not stoloniferous; native. 9. *V. pedata.*
    Leaves crenate; plant with long stolons; introduced. 10. *V. odorata.*
Petals pale yellow; leaves thin, cordate, crenate. 11. *V. rotundifolia.*

† † Rootstocks very slender or filiform, horizontal or creeping; none of the leaves lobed.

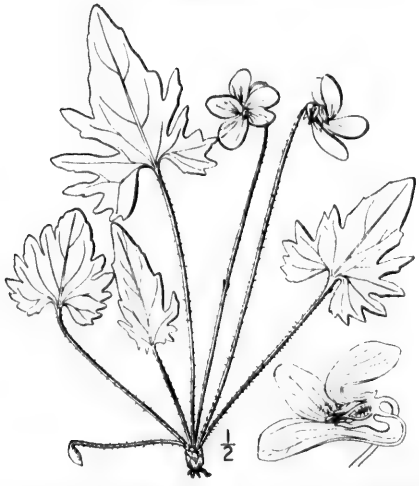
Petals violet, or blue, sometimes pale; northern species.
  Leaves crenulate; spur about 1″ long. 12. *V. palustris.*
  Leaves crenate; spur 2½″–4″ long. 13. *V. Selkirkii.*
Petals white, often purplish or brownish veined.
  Leaves broadly ovate, orbicular, or reniform, the blade not decurrent into the petiole.
    Glabrous, or nearly so; leaves ovate, orbicular, or some of them reniform. 14. *V. blanda.*
    Pubescent all over, at least when young; leaves nearly all reniform. 15. *V. renifolia.*
  Leaves linear, lanceolate, oval or ovate, the blade decurrent into the petiole.
    Leaves ovate, or oval, often pubescent. 16. *V. primulaefolia.*
    Leaves lanceolate, or linear, glabrous. 17. *V. lanceolata.*

* * **Caulescent, leafy-stemmed, the flowers axillary.**

Petals bright yellow.
  Leaf-blades lanceolate, tapering into the petiole. 18. *V. Nuttallii.*
  Leaves hastate, orbicular, or reniform; stem often leafless below.
    Leaves hastate-lanceolate or hastate-ovate. 19. *V. hastata.*
    Leaves orbicular, broadly ovate, or reniform.
      Villous, or pubescent; basal leaves usually wanting at flowering time. 20. *V. pubescens.*
      Sparingly pubescent, or glabrate; basal leaves usually present at flowering time. 21. *V. scabriuscula.*

Petals blue, purple, cream-color or white.
  Stipules entire; plant tall. 22. *V. Canadensis.*
  Stipules incised, fimbriate or pinnatifid.
    Perennial by rootstocks; stipules much smaller than the blades.
      Spur of corolla shorter than the petals.
        Glabrous, or nearly so; upper leaves mostly pointed.
          Petals cream-color, the lower one purplish-veined. 23. *V. striata.*
          Petals blue, rarely white. 24. *V. Labradorica.*
        Finely puberulent; leaves mostly all rounded or obtuse.
          Stems spreading or ascending; leaves, or some of them, ovate; northern. 25. *V. arenaria.*
          Stems prostrate; leaves orbicular; southern. 26. *V. multicaulis.*
      Spur of corolla longer than the petals. 27. *V. rostrata.*
    Annual; stipules large, foliaceous.
      Stem stout; flowers 8″–12″ broad; plant escaped from gardens. 28. *V. tricolor.*
      Stem slender; flowers 5″–8″ broad; plant of dry fields. 29. *V. tenella.*

1. Viola palmàta L. Early Blue Violet. (Fig. 2484.)



Viola palmata L. Sp. Pl. 933. 1753.
Viola cucullata var *palmata* A. Gray, Man. Ed. 5, 78. 1867.

Pubescent, villous or glabrous, acaulescent; rootstock thick, usually oblique, sometimes branched. Flowering scapes erect or ascending, commonly shorter than the leaves, sometimes longer; petioles mostly becoming much longer than the blades; blades variously 3–13-lobed, 1½′–5′ long when mature and about equally wide or wider, or some of the outer ones merely crenate-dentate; lobes lanceolate, ovate or oblong, crenate-dentate, the middle one usually much the broadest, the lateral ones often very oblique; sepals lanceolate or linear-oblong, acute, acuminate or obtusish; petals bright blue, rarely paler or white, 5″–12″ long; lateral petals bearded; style beardless; capsules 4″–6″ long, those from the numerous later cleistogamous flowers on horizontal or deflexed peduncles.

In dry soil, mostly in woods, rarely in meadows, Maine to southern Ontario and Minnesota, south to Georgia and Arkansas. A form with the lateral leaf-lobes linear, occurring in Illinois, Michigan and Wisconsin is, perhaps, distinct. April–May.

2. Viola Atlántica Britton. Coast Violet. (Fig. 2485.)

Viola Atlantica Britton, Bull. Torr. Club, 24: 92. 1897.

Glabrous, or with a few scattered hairs, acaulescent; rootstock thick, erect. Flowering scapes very slender, 4′–8′ high, mostly longer than the leaves; petioles much longer than the blades; blades ovate to reniform in outline, 1′–3′ wide when mature, deeply subpedately parted into linear or oblanceolate acute or acutish lobes; lobes with a few low distant teeth, or entire, the middle one somewhat the widest; sepals linear-lanceolate, long-acuminate, 4″–5″ long; petals blue, 6″–10″ long, at least the lateral ones bearded; capsules oval-oblong, nearly 6″ long, glabrous.

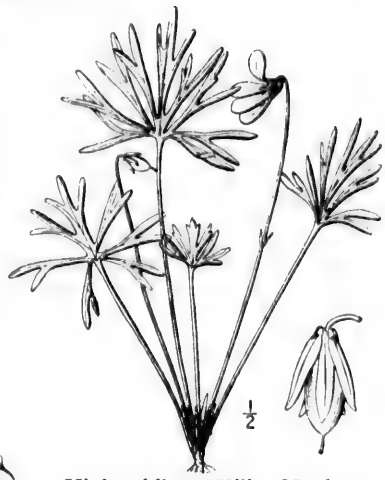
Eastern Massachusetts to southern New Jersey, in sandy soil near the coast. Simulates *V. pedatifida*. May–June.

3. **Viola pedatifida** Don. Prairie Violet. (Fig. 2486.)

Viola pedatifida Don, Gard. Dict. 1: 320. 1831.
Viola delphinifolia Nutt.; T. & G. Fl. N. A. 1: 136. 1838.

Minutely pubescent or almost glabrous, acaulescent. Leaves and scapes 3′–8′ high, arising from a thick short erect or ascending rootstock; petioles mostly longer than the blades; blades 1′–3′ wide, pedately 5–9-parted into linear obtuse segments, the segments entire or lobed, ciliate along the midvein and margins; stipules ovate-lanceolate, acuminate; flowers bright blue, nearly 1′ broad; sepals linear or lanceolate, acute or obtuse; lateral petals bearded; capsules 5″–6″ long, glabrous, those from cleistogamous flowers short-peduncled.

On prairies, Illinois to Saskatchewan, Colorado and Arizona. March–May.



4. **Viola obliqua** Hill. Meadow or Hooded Blue Violet. (Fig. 2487.)

V. obliqua Hill, Hort. Kew. 316. *pl. 12.* 1769.
Viola cucullata Ait. Hort. Kew. 3: 228. 1789.

Glabrous, or with a few scattered hairs when young, bright green, acaulescent. Rootstock short, thick, mostly erect; flowering scapes shorter than the leaves or much exceeding them; petioles slender, becoming very much longer than the blades; blades thin, ovate, orbicular or reniform, rarely ovate-lanceolate, acute, or acutish, 2′–4′ long, or those of the outer leaves obtuse, and rounded, all crenate or crenate-dentate, cordate at the base; sepals lanceolate, acuminate or acute; petals 6″–10″ long, blue, rarely white, sometimes striped, the lower and lateral ones bearded; capsules 4″–6″ long, those from cleistogamous flowers on horizontal or deflexed peduncles.

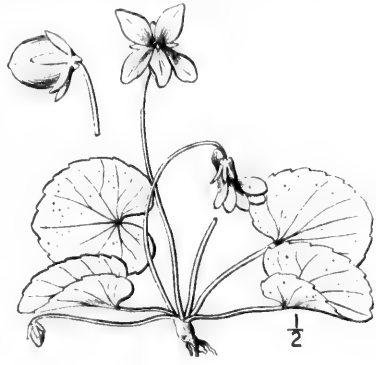
In woods, meadows and marshes, Nova Scotia to Minnesota, Georgia and Kansas. Ascends to 5000 ft. in Virginia. Bog-meadow forms have flowering scapes much longer than the leaves; some swampy woodland forms have almost lanceolate blades, twice as long as wide. April–June.

5. **Viola villòsa** Walt. Southern Wood Violet. (Fig. 2488.)

Viola villosa Walt. Fl. Car. 219. 1788.

Dark green, finely pubescent with appressed hairs, but not villous; rootstock short, thick, mostly oblique. Flowering scapes commonly longer than the leaves; leaves usually appressed to the ground and purple beneath, often mottled; petioles equalling the blades or longer; blades broadly ovate, suborbicular, or reniform, obtuse or some of them acute at the apex, crenate-dentate, none lobed, deeply cordate at the base, 1½′–2½′ wide when mature; sepals lanceolate or linear-lanceolate, obtuse or obtusish; petals blue, mostly bearded, 5″–7″ long; spur about 2″ long, very blunt; capsules 3″–4″ long, those of the cleistogamous flowers on spreading or deflexed peduncles.

In dry soil, on hillsides and in woods, Pennsylvania and New Jersey to Georgia and Louisiana. April–May.



6. Viola sorò̀ria Willd. Woolly Blue Violet. (Fig. 2489.)

Viola sororia Willd. Enum. 263. 1809.

Acaulescent, rootstock thick, mainly oblique. Leaves villous, at least when young, sometimes becoming glabrate when old, as long as the scapes or shorter; petioles usually becoming longer than the blades; blades ovate, suborbicular or some of them hastate-reniform, obtuse or acutish at the apex, crenate, cordate or some of them nearly truncate at the base, mostly abruptly narrowed into the petiole, none lobed; sepals oblong-lanceolate, obtuse or acute; petals blue, more or less bearded; capsules 4″–5″ long, those of the cleistogamous flowers on spreading or declined peduncles; spur short, rounded.

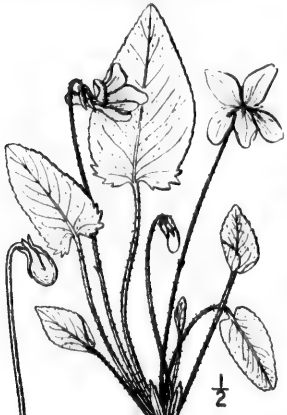
In dry soil, preferring shade, southern New York to Michigan, Nebraska, Virginia and Missouri. Blades of old leaves sometimes 5′ broad. April-July.

7. Viola sagittà̀ta Ait. Arrow-leaved Violet. (Fig. 2490.)

Viola sagittata Ait. Hort. Kew. 3: 287. 1789.

Acaulescent, glabrous or slightly pubescent; rootstock stout, short, erect or ascending. Flowering scapes as long as the leaves, or longer, 2′–9′ high; petioles, or most of them, becoming much longer than the blades; blades oblong, ovate, or lanceolate, obtusish or acute, crenate-dentate, or nearly entire above the middle, cordate or truncate at the base, which is usually laciniately toothed or incised; sepals linear-lanceolate, acuminate; petals dark blue, rarely paler, or white, all but the lower one bearded; stigma short-beaked, not bearded; capsules 4″–7″ long, glabrous, those from the abundant late cleistogamous flowers on erect peduncles.

In meadows or marshes, Maine to Minnesota, Georgia and Texas. April–May.



8. Viola ovà̀ta Nutt. Ovate-leaved Violet. (Fig. 2491.)

Viola ovata Nutt. Gen. 1: 148. 1818.
Viola sagittata var. *ovata* T. & G. Fl. N. A. 1: 133. 1838.

Pubescent or often villous, rarely glabrate, stemless; rootstock short, thick, from horizontal to erect. Flowering scapes 1′–6′ high, usually longer than the leaves; petioles not much longer than the blades, often shorter; blades ovate, lanceolate, or some of the lower ones suborbicular, acute or obtuse at the apex, crenate, sometimes with a few large teeth at the cordate truncate or abruptly narrowed base; sepals lanceolate, acuminate; corolla and capsules nearly as in *V. sagittata*, the capsules from cleistogamous flowers on erect peduncles.

In dry soil, preferring woods and thickets, Nova Scotia to Pennsylvania, Missouri and Louisiana. Mature blades sometimes 3½′ long by 2′ wide. April–May. Blooms earlier than *V. sagittata*, where the two grow in proximity.

9. Viola pedàta L. Bird's-foot Violet. (Fig. 2492.)

Viola pedata L. Sp. Pl. 933. 1753.
Viola pedata var. *bicolor* Pursh; Raf. in DC. Prodr. 1: 291. 1824.

Glabrous or nearly so, usually tufted, the rootstock short, thick, erect. Flowering scapes 3′–10′ high, about equalling the leaves, or longer; petioles mostly longer than the blades; blades reniform or suborbicular in outline, 9″–2′ wide, pedately parted into 5–11 narrow entire or toothed lobes, outer leaves commonly shorter-petioled, the lobes broader; petals ½′–1′ long, beardless, lilac, or blue, or one or the two upper dark purple [var. *bicolor*], all rarely white; stigma beardless, not beaked; capsules 5″–7″ long.

In dry fields and on hillsides, Maine and southern Ontario to Minnesota, Florida and Missouri. Plant not stoloniferous, and not producing cleistogamous flowers, but frequently blooming a second time in autumn. The *bicolor* form is the type of the species. April–June.

10. Viola odoràta L. English, March, or Sweet Violet. (Fig. 2493.)

Viola odorata L. Sp. Pl. 934. 1753.

Pubescent, downy, or glabrous, stoloniferous, the stolons leafy, rooting at the nodes, and bearing numerous cleistogamous flowers late in the season, the rootstock thick. Petioles 2′–5′ long; blades broadly ovate or orbicular, rounded or obtuse at the apex, cordate, crenate, 1′–2′ wide; flowering scapes about as long as the leaves, or shorter; flowers fragrant, 6″–10″ broad, blue, or in cultivated forms white; sepals oblong, mostly obtuse; petals beardless; pods from cleistogamous flowers on short decumbent peduncles.

Escaped from gardens, Nova Scotia to southern New York and New Jersey, and on the Pacific coast. Native of Europe. March–May.

11. Viola rotundifòlia Michx. Round-leaved Violet. (Fig. 2494.)

V. rotundifolia Michx. Fl. Bor. Am. 2: 150. 1803.

Somewhat pubescent, acaulescent; rootstock thick, sending out stolons late in the season, which bear cleistogamous flowers. Flowering scapes 2′–4′ high, longer than or equalling the leaves; blades of the leaves orbicular or ovate, ½′–2′ wide at flowering time, 3′–5′ broad and appressed to the ground in summer, cordate, crenate, glabrous or nearly so above, pale beneath; petioles not margined, becoming 2′–6′ long; sepals linear-oblong, obtuse; petals pale yellow, 3″–5″ long, the lateral ones bearded and with brown veins; spur very short; pods oval, about 3″ long, those from the cleistogamous flowers on deflexed peduncles.

In woods and on rocky hillsides, Labrador to Minnesota, south in the mountains to North Carolina. Ascends to 4500 ft. in Virginia. Basal sinus of the leaves short. April–May.

12. Viola palústris L. Marsh Violet. (Fig. 2495.)

Viola palustris L. Sp. Pl. 934. 1753.

Glabrous, acaulescent. Petioles and scapes arising from a very slender creeping or horizontal rootstock, the flowering scapes mostly exceeding the leaves; blades thin, cordate, broadly ovate, orbicular or reniform, 1′–2½′ wide, crenulate; stipules ovate, acuminate; sepals ovate, obtuse or obtusish; petals pale lilac streaked with darker veins, or nearly white, 4″–6″ long, slightly bearded; spur about 1″ long, obtuse; stigma not bearded, somewhat beaked; capsule 3″–4″ long.

In wet or moist soil, Labrador to Alaska, south to the mountains of New England, in the Rocky Mountains to Colorado, and to Washington. Also in Europe and Asia. May–July.

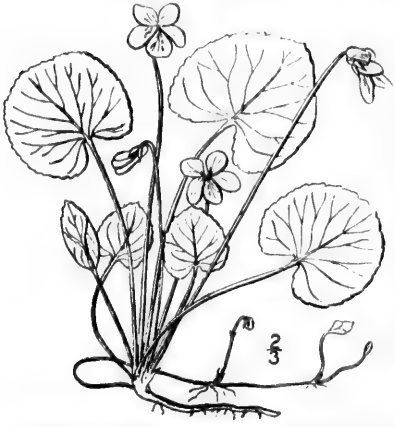
13. Viola Selkirkii Pursh. Selkirk's Violet. (Fig. 2496.)

Viola Selkirkii Pursh; Goldie, Edinb. Phil. Journ. 6: 324. 1822.

Glabrous or nearly so, dark green, the leaves and scapes erect or ascending from a slender or almost filiform creeping or horizontal rootstock. Flowering scapes 1½′–4′ high; petioles longer than the blades; blades thin, ½′–2′ wide, broadly ovate to nearly orbicular, deeply cordate, crenate, the apex short-acute or obtuse, the basal auricles rounded, often overlapping, the upper surface sparingly beset with short hairs near the margin; sepals lanceolate or ovate-lanceolate, acute or acutish; spur 2½″–4″ long, obtuse; petals pale violet, beardless; capsules 2″–3″ long, those from the late cleistogamous flowers on apparently ascending peduncles.

In woods, preferring moist soil, Nova Scotia to Minnesota, Massachusetts and Pennsylvania. Also in northern Europe and Asia. April–May.

14. Viola blánda Willd. Sweet White Violet. (Fig. 2497.)



Viola blanda Willd. Hort. Berol. *pl. 24.* 1806.

Acaulescent, glabrous or slightly pubescent. Rootstock very slender. Flowering scapes 1′–6′ high, often longer than the leaves; petioles slender, mostly longer than the blades; blades broadly ovate, orbicular, or some of them reniform, thin, ½′–2½′ wide, crenate, cordate, the apex obtuse or rounded; sepals lanceolate, acute or acuminate; flowers fragrant, white, 3″–6″ broad; sepals lanceolate; lower and lateral petals purple-veined, beardless or nearly so; capsules oval.

In swamps and wet meadows, rarely in dry situations, Newfoundland to British Columbia, North Carolina and California. Stolons slender, usually sparingly developed, the apetalous flowers usually few. April–May.

Viola blánda amoèna (LeConte) B.S.P. Prel. Cat. N. Y. 6. 1888.

Viola amoena LeConte, Ann. Lyc. N. Y. 2: 144. 1825.

Viola blanda var. *palustriformis* A. Gray, Bot. Gaz. 11: 255. 1886.

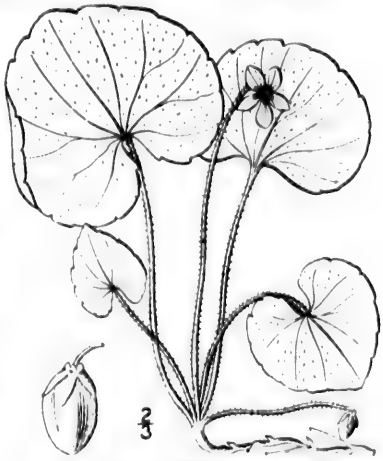
Leaves larger, usually with scattered hairs on the upper surface, at least when young, ovate; petioles flecked with red, usually longer. In wet woods, in hilly or mountainous districts.

15. Viola renifòlia A. Gray. Kidney-leaved Violet. (Fig. 2498.)

Viola renifolia A. Gray, Proc. Am. Acad. 8: 288. 1870.
Viola blanda var. *renifolia* A. Gray, Bot. Gaz. 11: 255. 1886.

Pubescent or villous all over, at least when young; rootstock slender, usually horizontal, sometimes 4′ long. Flowering scapes 2′–4′ high, about as long as the leaves; petioles slender; blades shorter than the petioles, reniform, wider than long, 1′–3′ wide when mature, or some of them orbicular or even broadly ovate, distantly crenate with low teeth, rounded at the apex, deeply cordate at the base; sepals linear-oblong, acutish, about 2″ long; petals white, mostly brownish veined, 3″–4″ long, usually beardless; capsules oval-oblong, about 4″ long, those of the later cleistogamous flowers on apparently deflexed peduncles.

In woods, fields and thickets, Nova Scotia to New York and Minnesota. April–June.



16. Viola primulaefòlia L. Primrose-leaved Violet. (Fig. 2499.)

Viola primulaefolia L. Sp. Pl. 934. 1753.

Somewhat pubescent or sometimes glabrous, rootstock very slender. Flowering scapes 2′–10′ high, often longer than the leaves; blades of the leaves ovate or oval, 1′–4′ long, 9″–2′ wide, usually decurrent into the long petioles, or truncate, or even subcordate at the base, crenate or nearly entire, mostly pubescent on the veins beneath; sepals lanceolate, acuminate; flowers similar to those of *V. lanceolata*, the white petals purple-veined, the lateral ones slightly bearded, or beardless; capsules oval, 3″–5″ long, those from the numerous late cleistogamous flowers short-peduncled, nodding.

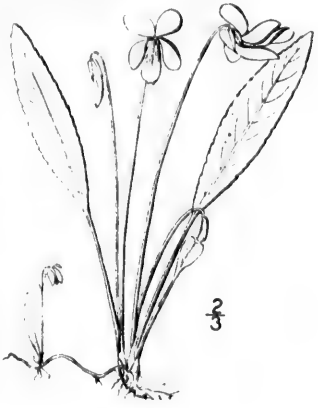
In open moist soil, New Brunswick to central New York, Florida and Louisiana. Produces long stolons late in the season. April–June.

17. Viola lanceolàta L. Lance-leaved Violet. (Fig. 2500.)

Viola lanceolata L. Sp. Pl. 934. 1753.

Glabrous, usually profusely stoloniferous late in the season, the stolons rooting at the nodes and bearing apetalous flowers; rootstock slender. Flowering scapes 2′–6′ high, about equalling the longer leaves; leaves lanceolate or linear-lanceolate, the blade 1½′–5′ long, 2″–9″ wide, gradually tapering into the long petiole, obscurely crenate, acute, acutish or obtuse; sepals lanceolate, acuminate, 2″–3″ long; petals white, 3″–4″ long, beardless, the lower and lateral ones striped with purplish veins; capsules oval, 3″–5″ long, those of the cleistogamous flowers nodding on short erect or ascending peduncles; flowers slightly fragrant.

In moist meadows and along streams, Nova Scotia to Minnesota, Florida and Texas. April–June.

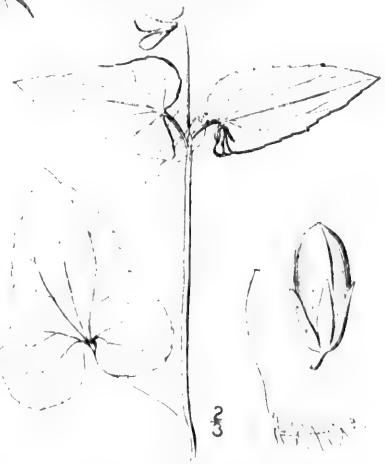


18. Viola Nuttàllii Pursh. Nuttall's Violet. (Fig. 2501.)

V. Nuttallii Pursh, Fl. Am. Sept. 174. 1814.

Somewhat pubescent, or nearly glabrous; at first nearly acaulescent, later becoming tufted and with stems erect or ascending, 2′–5′ high; rootstocks thick. Blades of the leaves lanceolate or ovate-lanceolate, thickish, 1′–3′ long, ½′–1′ wide, irregularly crenate-dentate, or entire, tapering into margined petioles 2′–6′ long; peduncles about equalling the leaves, or shorter; sepals lanceolate or linear, attenuate, 3″–6″ long; petals yellow, 4″–8″ long, slightly bearded, or beardless; stigma bearded, not beaked; capsule subglobose or oval, about 3″ long.

On prairies, Manitoba to Montana, Kansas and Arizona. May.



19. Viola hastàta Michx. Halberd-leaved Yellow Violet. (Fig. 2502.)

Viola hastata Michx. Fl. Bor. Am. **2**: 149. 1803.

Glabrous or nearly so, 5′–12′ high; stem simple, erect; rootstock long, creeping. Stem-leaves mainly near the summit, deltoid-lanceolate, hastate or rhombic-ovate, sometimes truncate at the base, 1′–3½′ long, ½′–2′ wide; basal leaves (when present) more cordate or dilated at the base, larger, all irregularly dentate or repand; stipules small, ovate, acute, sparingly toothed; petals 3″–6″ long, yellow, the lateral ones slightly bearded; sepals acute, linear-lanceolate, acute; spur very short; capsule glabrous, 4″–5″ long.

In woods, in mountainous or hilly districts, Pennsylvania to Ohio, south to Florida and Alabama. Ascends to 4500 ft. in Virginia. April–May.

2. Viola pubéscens Ait. Hairy Yellow Violet. (Fig. 2503.)

Viola pubescens Ait. Hort. Kew. **3**: 290. 1789.

Villous or pubescent, stems usually solitary, simple, erect, mostly stout, naked below, 5′–20′ high. Basal leaves long-petioled, usually wanting at flowering time; uppermost petioles shorter than the blades; blades broadly ovate, or orbicular, or reniform, 1½′–5½′ wide when mature, sometimes attenuate into the petiole, generally pointed, crenate-dentate; stipules ovate or ovate-lanceolate, entire, or slightly toothed; sepals oblong-lanceolate; petals bright yellow, 4″–6″ long, purple-veined; spur short; capsule white-tomentose or glabrous, oblong or oval, 5″–8″ long.

In dry woods, Quebec to Minnesota and South Dakota, south to Georgia and Iowa. April–May.

21. Viola scabriúscula (T. & G.) Schwein. Smoothish Yellow Violet. (Fig. 2504.)

Viola pubescens var. *scabriuscula* T. & G. Fl. N. A. 1: 142. 1838.
Viola scabriuscula Schwein.; T. & G. loc. cit. as synonym. 1838.

Sparingly pubescent above, especially when young, or glabrate; stems usually several together, decumbent, ascending or erect, mostly slender, 4′–15′ high. Basal leaves long-petioled, usually present at flowering time, the uppermost short-petioled; blades broadly ovate, orbicular, or reniform, crenate-dentate, cordate or truncate at the base, mostly pointed at the apex, 1′–2½′ broad when mature; stipules ovate to lanceolate, acutish, few-toothed or entire; sepals linear-lanceolate; petals lemon-yellow, 4″–7″ long; spur very short; capsule white-tomentose or glabrous, oval, 3″–5″ long.

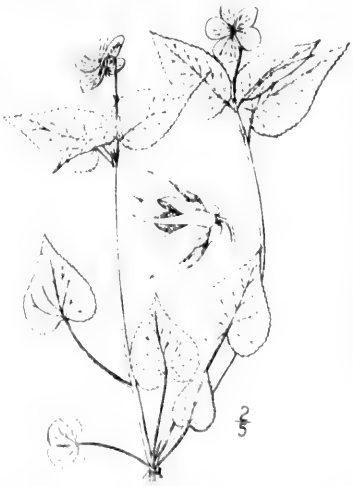
In woods and thickets, preferring moist situations, Nova Scotia to Manitoba and Nebraska, south to Georgia and Texas. Ascends to 4000 ft. in Virginia. April-May, blooming somewhat earlier than *V. pubescens*.

22. Viola Canadénsis L. Canada Violet. (Fig. 2505.)

Viola Canadensis L. Sp. Pl. 936. 1753.

Glabrous or nearly so, stems 3′–14′ high, tufted, leafy throughout. Leaves broadly ovate or nearly orbicular, cordate, acuminate or acute, 1′–2½′ long, serrate, the veins of the lower surface often pubescent; stipules ovate to lanceolate, acute or acuminate, entire; peduncles mainly shorter than the leaves; flowers pale violet or nearly white, often purple-tinged on the outside, and purple-veined, 5″–9″ broad, rarely white throughout; lateral petals bearded; sepals subulate pointed; capsule oval, glabrous, 3″–4″ long.

In woods, mainly in mountainous or hilly districts, Newfoundland and Hudson Bay to Saskatchewan, south to North Carolina, Tennessee, Nebraska, and in the Rocky Mountains to Arizona and New Mexico. Ascends to 4000 ft. in Virginia. May-July.



23. Viola striàta Ait. Pale or Striped Violet. (Fig. 2506.)

Viola striata Ait. Hort. Kew. 3: 290. 1789.

Glabrous, or slightly pubescent; stems angular, tufted, 5′–18′ high, leafy. Petioles slender, the lower longer than the blades; blades orbicular or ovate, 1′–2½′ wide, thin, often slightly pubescent above, those of the upper leaves acute or acuminate; stipules large, dentate or laciniate, the teeth ciliate; flowers long-peduncled; sepals linear-lanceolate, acuminate; petals cream-colored, light blue or white, veined, 5″–8″ long, the lateral ones bearded; spur about 2″ long; stigma beardless, short-beaked; capsule ovoid-oval, glabrous.

In moist woods and meadows, western New England and southern Ontario to Minnesota, south to Georgia, Kentucky and Missouri. Ascends to 3000 ft. in Virginia. April-May.

24. Viola Labradórica Schrank. American Dog Violet. (Fig. 2507.)

Viola Labradorica Schrank, Denksch. Bot. Gesell. Regensb. 2: 12. 1818.
Viola Muhlenbergii Torr. Fl. U. S. 1: 256. 1824.
Viola canina var. *Muhlenbergii* Traut. Act. Hort. Petr. 5: 28. 1877.

Glabrous, stems tufted, slender, decumbent or erect, 2′–6′ long, leafy. Blades of the leaves ovate, orbicular or reniform, cordate, ¼′–1½′ wide, the lower rounded at the apex, the upper sometimes acuminate; petioles slender, the lower usually longer than the blades; stipules ovate-lanceolate, acute, serrate-ciliate, or the upper nearly entire; sepals linear-lanceolate, acuminate; flowers long-peduncled; petals light purple, rarely white, 5″–7″ long, the lateral ones slightly bearded; spur about one-half as long as the petals; style short-beaked, beardless; capsules 2″–3″ long, glabrous.

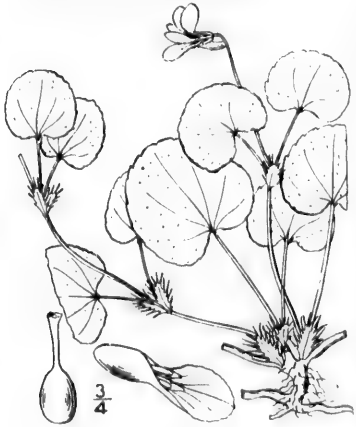
In moist or wet soil, preferring shade, Labrador to Minnesota, North Carolina and Kentucky. Produces cleistogamous flowers late in the season on short peduncles. March–May.

25. Viola arenària DC. Sand Violet. (Fig. 2508.)

Viola arenaria DC. Fl. Franc. 4: 806. 1805.
Viola canina var. *puberula* S. Wats. in A. Gray, Man. Ed. 6, 81. 1890.
V. subvestita Greene, Erythea, 5: 39. 1897.

Finely puberulent, stems tufted, slender, spreading or ascending, 2′–6′ long. Petioles longer than the blades, or the upper shorter; stipules incised; blades ovate, orbicular, or some of the lower ones reniform, ¼′–1′ long, crenulate, obtuse or acutish at the apex, cordate or truncate at the base, thickish; peduncles slender, often longer than the leaves; sepals linear or linear-lanceolate, acuminate; petals violet, 4″–6″ long; spur obtuse, about 3″ long; capsule 3″–4″ long.

On shores and in sandy soil, Maine to Michigan, South Dakota and Saskatchewan. Also in Europe. The American plant has more ovate leaves than the European. May–June.



26. Viola multicaùlis (T. & G.) Britton. Prostrate Blue Violet. (Fig. 2509.)

Viola Muhlenbergii var. *multicaulis* T. & G. Fl. 1: 140. 1838.
Viola multicaulis Britton, Mem. Torr. Club, 5: 227. 1894.

Very finely puberulent, stems slender, usually several together, tufted, prostrate, leafy, 2′–8′ long. Petioles slender, the lower as long as the blades, or longer; blades mostly orbicular, rounded or obtuse at the apex, crenulate, firm, deeply cordate, not over 1½′ wide when mature; stipules deeply laciniate, 6″–10″ long; peduncles mostly longer than the leaves, the bracts often borne much above the middle; sepals lanceolate, acuminate; petals violet, 4″–5″ long, bearded; style not bearded; capsule 3″–4″ long, glabrous.

In woods, Kentucky to Florida, Louisiana and Texas. Feb.–July, bearing cleistogamous flowers later. Leaves sometimes mottled.

27. Viola rostràta Pursh. Long-spurred Violet. (Fig. 2510.)

Viola rostrata Pursh, Fl. Am. Sept. 174. 1814.

Glabrous, 2′–7′ high, branching from the base, the stems ascending. Leaves cordate or the lower reniform, ½′–1½′ long, serrate, the upper often acuminate; stipules lanceolate, ciliate-laciniate; flowers pale violet, veined with blue, 8″–10″ broad; sepals narrowly linear-lanceolate, acuminate; petals beardless; spur slender, about 6″ long, as long as the petals or longer; capsule about 4″ long, glabrous.

In moist rocky places, Quebec to Michigan, south in the mountains to Georgia. Ascends to 2500 ft. in Virginia. June–July.

28. Viola tricolor L. Pansy. Lady's-delight. Heartsease. (Fig. 2511.)

Viola tricolor L. Sp. Pl. 935. 1753.

Glabrous or pubescent, 4′–12′ high; stem angled and often branched; upper leaves oval or lanceolate, ½′–1′ long, the lower ovate, often cordate, all crenate-dentate; stipules foliaceous, laciniate or lyrate-pinnatifid; flowers 8″–1′ broad, variously colored with yellow, purple or white, and veined.

In waste places, sparingly escaped from gardens. May–July. Introduced from Europe. English names from 40 to 50, among which are Johnny Jump-up or Johnny Jumper, Monkey's Face, Love in Idleness, Fancy, Biddy's Eyes, Herb Trinity, Cats' Faces, Flamy, Garden Gate.

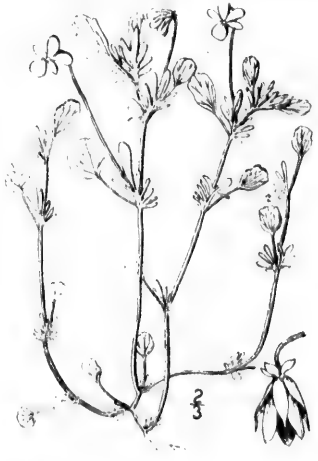
29. Viola tenélla Muhl. Field Pansy. (Fig. 2512.)

Viola tenella Muhl. Cat. 26. 1813.

Viola tricolor var. *arvensis* Hook. Fl. Bor. Am. 1: 81. 1830.

Slender, nearly glabrous, mostly simple, 3′–9′ high. Leaves and stipules similar to those of the last species but smaller; sparingly toothed or entire; flowers 5″–7″ broad; petals yellowish, blue or purple-spotted, often but little longer than the sepals; pods glabrous, 3″ long, or less.

In woods and fields, New York to Georgia, west to Michigan and Texas. Apparently native and different from the European *V. arvensis* Murr. May.



2. CUBÈLIUM Raf. Cat. Bot. Gard. Trans. 13, name only. 1824. Jackson, Index Kew. 1: 663. 1893.

[Solea Spreng. Pl. Min. Cog. Pug. 1: 22. 1813. Not Spreng. 1800.]

Erect perennial leafy herbs, with entire sparingly toothed or undulate leaves, and small greenish white axillary flowers. Sepals 5, linear, equal, not prolonged at the base. Petals nearly equal, erect, imbricate, the lower one obcordate, broader than the others, which are nearly alike in shape. Stamens 5, syngenesious, the sheath with a 2-lobed gland at the base; anthers almost sessile. Ovules 3 or 4 on each placenta; style hooked at the apex. Capsules slightly lobed, 3-valved, the valves infolded after dehiscence. Seeds obovoid-globose; embryo nearly the length of the endosperm. [Greek, from Cybele.]

A monotypic genus of eastern North America.

Cubelium cóncolor (Forst.) Raf. Green Violet. (Fig. 2513.)

Viola concolor Forst. Trans. Linn. Soc. 6: 309. 1802.
Solea concolor Ging. in DC. Prodr. 1: 306. 1824.
Cubelium concolor Raf.; Jackson, Index Kew. 1: 663. 1893.

Simple, 1°–2° high, more or less pubescent. Leaves alternate, ascending, oblong-lanceolate, 3′–4½′ long, 1′–1½′ wide, acuminate, attenuate at the base into a short petiole, entire, or with a few lateral teeth near the apex; stipules linear, acute, 3″–6″ long; flowers axillary, 1–3 together, about 4″ long, on recurved pedicels; sepals linear, about equalling the corolla; lower petal twice as broad as the others, gibbous at the base; capsule oblong, 8″–12″ long, dehiscent by 3 valves; seeds large.

In moist woods and copses, northern New York and southern Ontario to Michigan, south to North Carolina and Kansas. Ascends to 2500 ft. in Virginia. May–June.

3. CALCEOLÀRIA Loefl. Iter. 183. 1758.

[Solea Spreng. in Schrad. Journ. Bot. 4: 192. 1800.]

[Ionidium Vent. Hort. Malm. *pl. 27.* 1803.]

Herbs, rarely shrubs, with mostly opposite leaves, and axillary or racemose flowers. Sepals somewhat unequal, not prolonged posteriorly. Petals unequal, the lower one longest, gibbous or saccate at the base, the two upper shorter than the lateral ones. Filaments distinct, the lower spurred or glandular; anthers connivent, not united. Capsule elastically 3-valved. Seeds ovoid-globose, with hard seed-coats. [Latin, slipper-like.]

A genus of about 45 species, mainly natives of tropical America, a few in Asia and Australia.

1. Calceolaria verticillàta (Ort.) Kuntze. Nodding Violet. (Fig. 2514.)

Viola verticillata Ort. Dec. Pl. 4: 50. 1797.
Ionidium polygalaefolium Vent. Jard. Malm. *pl. 27.* 1803.
Ionidium lineare Torr. Ann. Lyc. N. Y. 2: 168. 1827.
Calceolaria verticillata Kuntze, Rev. Gen. Pl. 41. 1891.

Somewhat pubescent or nearly glabrous, tufted from a woody base; stems erect or ascending, 4′–15′ high, simple or branched. Leaves alternate, or the lower sometimes opposite, linear, oblong or oblanceolate, entire, obtuse, 9″–20″ long, 1″–4″ wide, often with smaller ones fascicled in their axils, and thus appearing verticillate; stipules subulate or foliaceous; flowers white, axillary, solitary, nodding, 2″–3″ long; pedicels slender or filiform, 3″–7″ long; capsule obovoid, 2″ long; seeds nearly 1″ long.

In dry soil, Kansas to Texas, Mexico, Colorado and New Mexico. April–July.

Family 80. **PASSIFLORÀCEAE** Dumort. Anal. Fam. 37. 1829.

PASSION-FLOWER FAMILY.

Woody vines, climbing by tendrils, or erect herbs, with alternate petioled usually palmately-lobed leaves, and solitary or clustered perfect regular flowers. Calyx-tube short or elongated, persistent. Petals usually 5, inserted on the throat of the calyx, distinct, or in some species united. Stamens 5. Throat of the calyx crowned with a double or triple fringe. Filaments subulate or filiform, monadelphous, or separate. Ovary free from the calyx, 1-celled; placentae 3–5, parietal; styles 1–5. Fruit a berry or capsule, usually many-seeded.

About 18 genera and 325 species, of warm and tropical regions, most abundant in South America.

1. **PASSIFLÒRA** L. Sp. Pl. 955. 1753.

Climbing tendril-bearing herbaceous or woody vines, with lobed parted or entire alternate or rarely opposite leaves, and large showy axillary flowers, on jointed, often bracted peduncles. Calyx-tube cup-shaped or campanulate, 4–5-lobed, the lobes narrow, imbricated in the bud, its throat crowned with a double or triple fringe called the corona. Petals 4 or 5 (rarely none), inserted on the throat of the calyx Ovary oblong, stalked. Filaments monadelphous in a tube around the stalk of the ovary, separate above; anthers narrow, versatile. Fruit a many-seeded berry. Seeds pulpy-arilled, flat, ovate; endosperm fleshy. [Flower of the Cross, or Passion, as emblematic of the crucifixion.]

About 250 species, mostly natives of tropical America, a few in Asia and Australia. Besides the following, about 7 others occur in the southern and southwestern States.

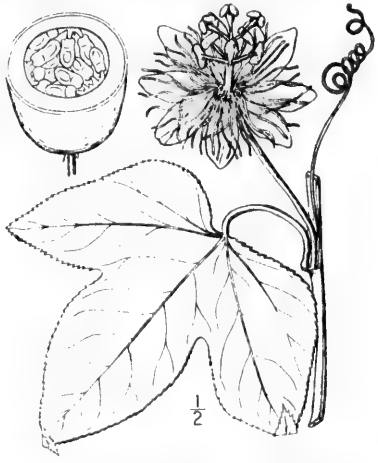
Leaves deeply 3–5-lobed; the lobes serrate; petals whitish; corona purple. 1. *P. incarnata.*
Leaves obtusely 3-lobed above the middle, the lobes entire; flower yellowish. 2. *P. lutea.*

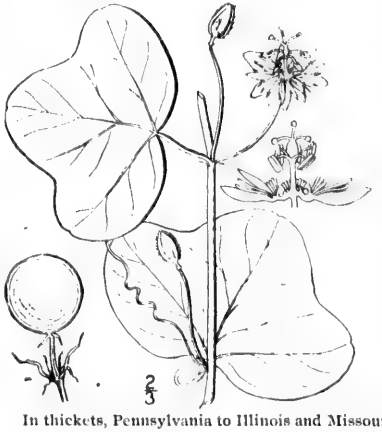
1. Passiflora incarnàta L. Passion-flower. Passion-vine. (Fig. 2515.)

Passiflora incarnata L. Sp. Pl. 959. 1753.

Stem glabrous, or slightly pubescent above, striate when dry, climbing to a height of 10°–30°. Petioles ½′–2′ long, with 2 glands near the summit; leaves nearly orbicular in outline, glabrous, or often somewhat pubescent, 3′–5′ broad, somewhat cordate at the base, deeply 3-lobed, (rarely 5-lobed), the lobes ovate or oval, acute or acutish, finely serrate; flowers solitary, axillary, white with a purple or pink corona, 1½′–2′ broad; peduncles longer than the petioles, usually 3-bracted just below the flowers; calyx-lobes linear, cuspidate on the back; berry ovoid, nearly 2′ long, glabrous, yellow.

In dry soil, Virginia to Missouri, south to Florida and the Indian Territory. Fruit edible, called Maypops. May–July.





2. Passiflora lùtea L. Yellow Passion-flower. (Fig. 2516.)

Passiflora lutea L. Sp. Pl. 958. 1753.

Glabrous or very nearly so throughout, climbing or trailing, 3°–10° long. Petioles ½′–1½′ long; leaves much broader than long, more or less cordate at base, with 3 wide obtuse rounded lobes, the lobes entire, often mucronulate; stipules 1″–1½″ long; peduncles slender, exceeding the petioles, usually in pairs from the upper axils; flowers greenish yellow, 6″–10″ broad; calyx-lobes linear; berry globose-ovoid, 5′ 6″ in diameter, glabrous, deep purple.

In thickets, Pennsylvania to Illinois and Missouri, south to Florida and Louisiana. May–July.

Family 81. **LOASÀCEAE** Reichenb. Consp. 160. 1828.

LOASA FAMILY.

Erect or climbing branching herbs, often armed with hooked stinging or viscid hairs, with alternate or opposite exstipulate leaves, and solitary racemose or cymose, regular and perfect, white yellow or reddish flowers. Calyx-tube adnate to the ovary, its limb 4–5-lobed, persistent. Petals 4–5, inserted on the throat of the calyx. Stamens ∞, inserted with the petals; filaments filiform, commonly arranged in clusters opposite the petals; anthers introrse, longitudinally dehiscent. Ovary 1-celled (rarely 2–3-celled), with 2–3 parietal placentae; style filiform, entire or 2–3-lobed; ovules anatropous. Capsule usually 1-celled, crowned with the calyx-limb. Seeds mostly numerous; endosperm scanty.

About 13 genera and 200 species, all but 1 natives of America.

1. **MENTZÈLIA** L. Sp. Pl. 516. 1753.

Erect herbs, sometimes woody, with alternate entire lobed or pinnatifid leaves, and terminal solitary or cymose usually showy flowers. Calyx-tube cylindric, obconic or club-shaped, its limb generally 5-lobed. Petals 5 or 10, spreading, convolute in the bud, deciduous. Stamens 20–300. Ovary 1-celled; styles 3, more or less united; stigmas small, obtuse. Capsule dehiscent at the summit, few–many-seeded. Seeds flat and sometimes winged, roughened or smooth. [Named in honor of C. Mentzel, a German botanist, died 1701.]

About 50 species, natives of western America. Besides the following, some 25 others occur in the western parts of North America.

Flowers 5″–10″ broad, yellow.
- Leaves, at least the lower, petioled; stem very rough; calyx-lobes 3″ long. 1. *M. oligosperma.*
- Leaves sessile; stem little rough; calyx-lobes 2″ long. 3. *M. albicaulis.*

Flowers 1½′–4′ broad.
- Flowers yellowish-white, opening in the evening.
  - Flowers 1¼′–2′ broad; calyx-tube usually bractless. 2. *M. nuda.*
  - Flowers 3′–4′ broad; calyx-tube usually bracted. 4. *M. decapetala.*
- Flowers bright yellow, opening in sunshine. 5. *M. laevicaulis.*

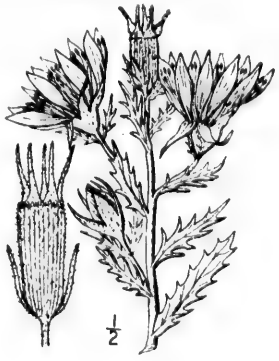
1. Mentzelia oligospérma Nutt. Few-seeded Mentzelia. (Fig. 2517.)

Mentzelia oligosperma Nutt. in Bot. Mag. *pl. 1760.* 1815.
Mentzelia aurea Nutt. Gen. 1: 300. 1818.

Rough and viscid-pubescent, 1°–3° high. Leaves ovate or oval, coarsely dentate or sinuate, acute or obtusish at the apex, 1′–3′ long, the upper rounded or truncate at the base and sessile, the lower narrowed at the base and usually petioled; flowers yellow, 5″–10″ broad, axillary or somewhat cymose, opening in sunshine; petals 5, oblong-cuneate, acute, about twice as long as the linear-lanceolate calyx-lobes; filaments 20–30, all filiform; capsule linear, 6″–8″ long, few-seeded; calyx-lobes about 3″ long; seeds oblong, wingless.

Prairies, Illinois to Kansas and Colorado, south to Louisiana, Texas and Mexico. May–July.

2. Mentzelia nùda (Pursh) T. & G. Bractless Mentzelia. (Fig. 2518.)



Bartonia nuda Pursh, Fl. Am. Sept. 328. 1814.
Mentzelia nuda T. & G. Fl. N. A. 1: 535. 1840.

Rough with minute pubescence, slender, 1°–5° high, the stems light-colored. Leaves all sessile, lanceolate or oblong-lanceolate, acute at the apex, usually sharply and deeply dentate, or the upper pinnatifid, 1′–3′ long; flowers terminal and axillary, yellowish white, 1½′–2′ broad, opening in the evening; petals 10, about twice as long as the lanceolate calyx-lobes; calyx-tube usually not bracteolate; stamens 100 or more, the outer ones somewhat petaloid; capsule oblong, 9″–12″ long, about 3″ thick; seeds numerous, wing-margined.

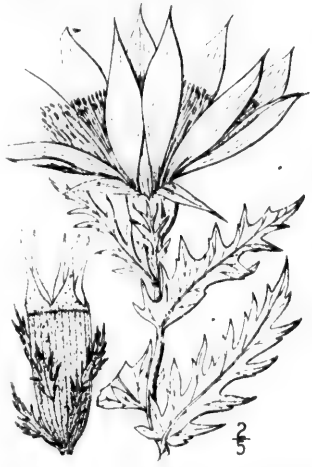
Plains, Dakota to Kansas, Colorado and Texas. July–Aug.

3. Mentzelia albicaùlis Dougl. White-stemmed Mentzelia. (Fig. 2519.)

Mentzelia albicaulis Dougl.; Hook. Fl. Bor. Am. 1: 222. As synonym. 1833.
Bartonia albicaulis Dougl.; Hook. Fl. Bor. Am. 1: 222. 1833.

Stem nearly white, erect or ascending, slender, branched, shining, nearly smooth, or roughish above, 6′–2° high. Leaves sessile, mostly lanceolate in outline, sinuate-pinnatifid, sinuate-lobed, or the upper and lower sometimes entire, rough with short stiff hairs, 1′–3′ long; flowers yellow, few together at the ends of the branches, or also axillary, 6″–10″ broad, short-pedicelled or sessile; calyx-lobes linear-lanceolate, about 2″ long; capsule linear, 1′ long or less, many-seeded; seeds angled, tuberculate, wingless.

Western Nebraska to British Columbia, California and New Mexico, the more eastern plant with less pinnatifid leaves than the western, and perhaps different specifically. May–July.



4. Mentzelia decapétala (Pursh) Urban & Gilg. Showy Mentzelia. (Fig. 2520.)

Bartonia decapetala Pursh, in Bot. Mag. *pl. 1487.* 1812.
Bartonia ornata Pursh, Fl. Am. Sept. 327. 1814.
Mentzelia ornata T. & G. Fl. N. A. 1: 534. 1840.
Mentzelia decapetala Urban & Gilg, in Engl. & Prantl, Nat. Pfl. Fam. 3: Abt. 6a, 111. 1894.

Roughish-pubescent, stout, seldom over 2° high. Leaves oval, lanceolate or oblong, acute or acuminate at the apex, sinuate-pinnatifid, 2′–6′ long, the upper sessile, the lower petioled; flowers mostly solitary and terminal, yellowish white, 3′–5′ broad, opening in the evening; petals 10, about twice as long as the lanceolate calyx-lobes; calyx-tube usually bracted; filaments all filiform, very numerous (200–300); capsule oblong, 1½′–2′ long, 5″–6″ thick; seeds numerous, margined, not winged.

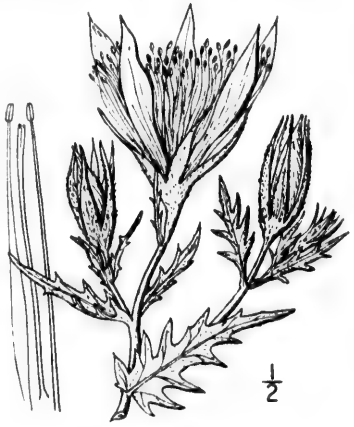
Plains, Dakota and Montana to Nebraska and Texas. June–Sept.

5. Mentzelia laevicaùlis (Dougl.) T. & G. Smooth-stemmed Mentzelia. (Fig. 2521.)

Bartonia laevicaulis Dougl.; Hook. Fl. Bor. Am. 1: 221. 1833.
Mentzelia laevicaulis T. & G. Fl. N. A. 1: 535. 1840.

Stout, 2°–4° high, minutely pubescent, or the stems at length glabrate and whitish. Leaves sessile, lanceolate or ovate-lanceolate, sinuate-pinnatifid, acute or acuminate at the apex, 1′–3′ long; flowers mostly solitary and terminal, bright yellow, 3′–4′ broad, opening in sunshine; calyx-tube bractless; petals 5, or with 5 additional narrower inner ones, 2–3 times as long as the calyx-lobes; stamens very numerous; capsule oblong, about 1′ long, 4″ in diameter; seeds numerous, winged, minutely tuberculate.

Plains and dry soil, Nebraska, Montana and Wyoming to Oregon, south to Utah and California. June–July.



Family 82. **CACTÀCEAE** Lindl. Nat. Syst. Ed. 2, 53. 1836.

CACTUS FAMILY.

Fleshy plants, with flattened terete ridged or tubercled, continuous or jointed stems, leafless, or with small leaves, generally abundantly spiny, the spines developed from cushions of minute bristles (areolae). Flowers mostly solitary, sessile, terminal or lateral, perfect, regular, showy. Calyx-tube adnate to the ovary, its limb many-lobed or with distinct sepals. Petals numerous, imbricated in several rows, mostly distinct. Stamens numerous, inserted on the throat of the calyx. Filaments filiform; anthers small. Ovary 1-celled; ovules numerous, anatropous, borne on several parietal placentae. Style terminal, elongated; stigmas numerous. Fruit a berry, mostly fleshy, sometimes nearly dry. Seeds smooth, or tubercled, the testa usually crustaceous or bony; endosperm little, or copious.

About 20 genera and 1000 species, nearly all natives of America.

Stems subglobose, oval, ovoid or cylindric, tubercled, ribbed or angled; no proper leaves.
Flowers borne on the tubercles or ribs, at or near the areolae.
Flowers borne close to fully developed clusters of spines. 1. *Echinocereus.*
Flowers borne close to areolae, from which the spines subsequently develop. 2. *Echinocactus.*
Flowers borne between the tubercles, distant from the areolae. 3. *Cactus.*
Plants jointed, the joints flattened, or cylindric; leaves present, mostly subulate and deciduous. 4. *Opuntia.*

1. **ECHINOCÈREUS** Engelm. Wisliz. Tour North. Mex. 91. 1848.

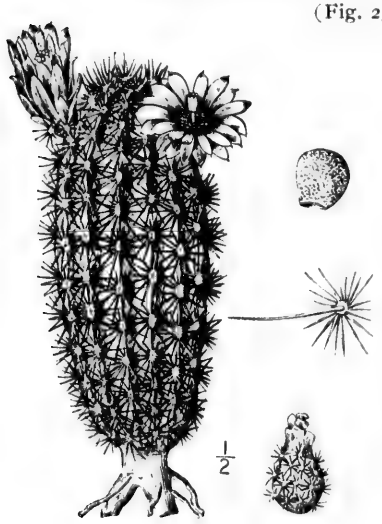
Stems ovoid, cylindric or oval, ribbed, or tubercled, the ribs or rows of tubercles usually straight, vertical. Proper leaves none. Spine-bearing areolae on the ribs or tubercles. Flowers borne on the ribs or tubercles, at or near the areolae, close to fully developed clusters of spines. Calyx-tube with spine-bearing areolae, or scaly, prolonged beyond the ovary. [Greek hedgehog-*Cereus.*]

About 45 species, natives of America. Besides the following, some 20 others occur in the southwestern United States.

Flowers greenish, about 1′ broad; fruit 5″–6″ long. 1. *E. viridiflorus.*
Flowers rose-purple, 2′–3′ broad; fruit 9″–10″ long. 2. *E. caespitosus.*

1. **Echinocereus viridiflòrus** Engelm. Green-flowered Cereus.

(Fig. 2522.)



Echinocereus viridiflorus Engelm. Wisliz. Tour North. Mex. 91. 1848.

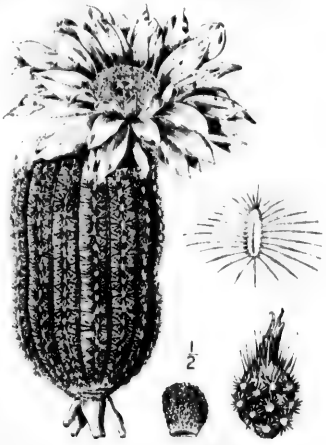
Cereus viridiflorus Engelm. Mem. Am. Acad. (II.) **4**: 50. 1849.

Stem subglobose to oval-cylindric, 1′–8′ high, simple, or sparingly branched, 1′–2′ in diameter. Ribs about 13; longer radial spines 12–18, with 2–6 setaceous upper ones, the lateral ones reddish brown, the others white or rarely purple; central spine stout, straight or curved, or wanting, purple and white; flowers about 1′ broad, greenish brown without, yellowish green within; petals obtuse or acute; fruit ellipsoid, greenish, 5″–6″ long; seeds tubercled.

Western Kansas (according to B. B. Smyth), Wyoming to Texas and New Mexico. Our figure is copied from plate 36, Cactaceae of the Mexican Boundary Survey, representing the *Cereus viridiflorus tubulosus* Coult. Contr. Nat. Herb. **3**: 383. 1896.

2. Echinocereus caespitòsus Engelm. & Gray. Tufted Cereus. (Fig. 2523.)

Cereus caespitosus Engelm. & Gray, Bost. Journ. Nat. Hist. 5: 247. 1845.
Echinocereus caespitosus Engelm. Wisliz. Tour North. Mexico, 110. 1848.



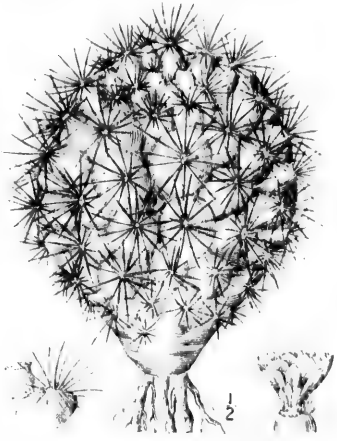
Stems ovoid-globose to ovoid-cylindric, usually tufted, sometimes as many as 12 together, sometimes single, 1′–6′ high, 1′–4′ in diameter; ribs 12 or 13; radial spines 20–30, pectinate, white, the lateral ones the longer, 2″–4″ long; central spines wanting, or sometimes 1 or 2 short ones; flowers rose-purple, 2′–3′ broad, fruit ovoid, green, 9″–10″ long; seeds tubercled, black, about ½″ long.

Western Kansas (according to B. B. Smyth), Indian Territory to Texas and Mexico.

2. ECHINOCÁCTUS Link & Otto, Verhand. Preiss. Gartenb. Ver. 3: 420. 1827.

Stems globose, oblong or cylindric, leafless, tubercled, the tubercles arranged in straight or spiral rows, bearing clusters of spines arising from areolae. Flowers borne on the tubercles, at or near areolae from which spines are subsequently developed. Calyx-tube prolonged beyond the ovary, usually covered with scales, its lobes numerous, the outer scale-like, the inner elongated. Petals numerous, similar to the inner sepals. Stamens numerous, borne on the tube of the calyx. Ovary exserted; style columnar. Berry usually covered with scales and often with tufts of minute bristles. [Greek, hedgehog-cactus.]

About 200 described species, natives of America. Besides the following, some 30 others occur in the western and southwestern States.



1. Echinocactus Simpsoni Engelm. Simpson's Cactus. Hedgehog-thistle. (Fig. 2524.)

Echinocactus Simpsoni Engelm. Trans. St. Louis Acad. 2: 197. 1863.

Stems single, globose or with a narrowed base, 3′–6′ high, 3′–4′ in diameter. Tubercles ovoid, somewhat 4-sided at base, 6″–8″ long, arranged in spirals; central spines yellowish below, nearly black above, 5″–7″ long, the exterior ones slightly shorter, whitish; flowers greenish pink, 8″–10″ long and about as broad, borne to one side at the ends of the tubercles; petals oblong, crenulate and cuspidate at the apex; berry dry, 3″–3½″ in diameter, bearing near its summit 2–3 scales which sometimes have short spines in their axils.

Kansas (according to B. B. Smyth) to Colorado, Utah and Nevada. April–May.

3. CÁCTUS L. Sp. Pl. 466. 1753.

[MAMILLARIA Haw. Syn. Plant. Succ. 177. 1812. Not Stackh. 1809.]

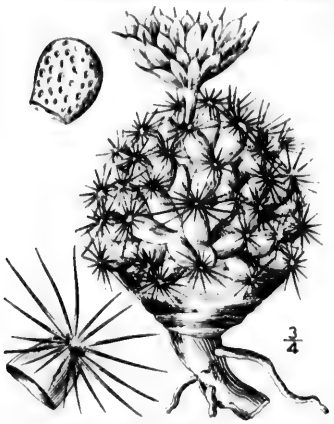
Stems solitary or clustered, globose or ovoid, tubercled. Tubercles conic or cylindric, woolly and with clusters of spines at the apex. Leaves none. Flowers borne from areolae at the bases of the tubercles. Calyx-tube campanulate or funnel-form, produced beyond the ovary, which is often hidden between the tubercles. Petals in several rows. Ovary smooth, ovoid; style filiform. Berry ovoid or club-shaped, emersed, crowned by the withering corolla. [Greek name of some prickly plant.]

About 300 described species, natives of warm and tropical America. Besides the following, some 35 or more occur in the southwestern States.

Flowers yellow or reddish; central spine 1. 1. *C. Missouriensis.*
Flowers purple; central spines several. 2. *C. viviparus.*

1. Cactus Missouriénsis (Sweet.) Kuntze. Missouri or Nipple Cactus. (Fig. 2525.)

Cactus mamillaris Nutt. Gen. 1: 295. 1818. Not L. 1753.
Mamillaria Missouriensis Sweet, Hort. Brit. 171. 1827.
M. Nuttallii Engelm. Mem. Am. Acad. 4: 39. 1849.
Cactus Missouriensis Kuntze, Rev. Gen. Pl. 259. 1891.



Stems mostly single, globose, 1′–2′ high. Tubercles 6″–8″ long, arranged in about 8 spiral rows, slightly grooved; spines gray, 10–20 together, the stouter central one 5″–6″ long, or wanting; flowers yellow, or reddish, about 1′ long and about the same breadth when expanded; petals 2″–3″ wide, acute, abruptly mucronate; stigmas 2–5, very short, erect; berry globose, scarlet, 3″–4″ in diameter, ripening the following spring; seeds black, globose, pitted, about ½″ in diameter.

Prairies and dry soil, South Dakota to Kansas and Texas, west to Colorado. May.

Cactus Missouriénsis similis (Engelm.) Coult. Contr. Nat. Herb. 3: 111. 1894.

Mamillaria similis Engelm. Bost. Journ. Nat. Hist. 5: 246. 1845.

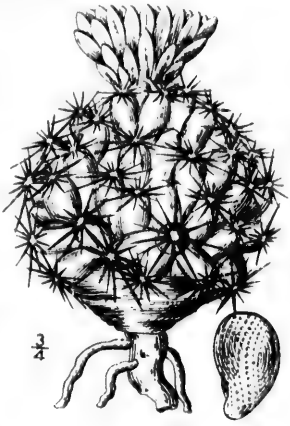
Stems tufted; flowers 1′–2′ long; seeds about 1″ long. Kansas and Colorado to Texas.

2. Cactus víviparus Nutt. Purple Cactus. (Fig. 2526.)

Cactus viviparus Nutt. Fraser's Cat. 1813.
Mamillaria vivipara Haw. Syn. Pl. Succ. Suppl. 72. 1819.

Stems single or tufted, 1′–5′ high, 1½′–2′ in diameter. Tubercles terete or nearly so, slightly grooved, bearing 3–8 slender reddish-brown spines, 6″–10″ long, surrounded by 12–25 somewhat shorter, whitish or greenish ones in a single row; flowers purple, nearly 2′ long; petals lanceolate, narrow; sepals fringed; berry ovoid, 6″–9″ long, green; seeds light brown, obovoid, curved, pitted, about ¾″ long.

Prairies, Manitoba to Alberta, Kansas, and Colorado.



4. OPÚNTIA Mill. Gard. Dict. Ed. 7. 1759.

Succulent plants, with jointed branching stems, the joints flat, or cylindric, and small mostly subulate deciduous spirally arranged leaves, the areolae axillary, often spine-bearing. Flowers usually lateral. Calyx-tube not prolonged beyond the ovary, its lobes numerous, spreading. Petals numerous, slightly united at the base. Stamens very numerous, arranged in several rows; filaments distinct or slightly united. Ovary cylindric, exserted; style cylindric, longer than the stamens; stigma 2–7-rayed. Berry pear-shaped, often spiny. [Named from a town in Greece where some species grew.]

About 150 species, natives of America. Besides the following, some 50 others occur in the western and southwestern States.

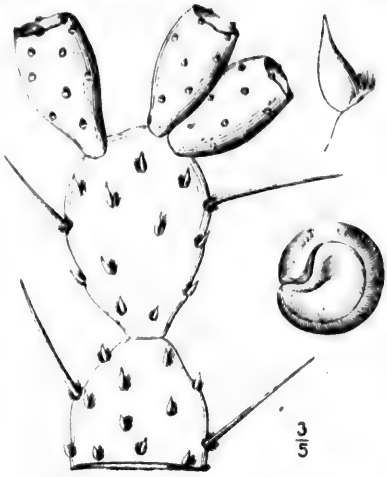
Joints flattened, oval, oblong, obovate or orbicular; stems prostrate or ascending.
  Fruit fleshy, juicy, spineless or sparingly spiny.
    Joints spineless, or with solitary stout spines. 1. *O. Opuntia.*
    Joints spiny (no. 2 sometimes unarmed), the spines 1–15 at each areola.
      Spines white, gray or yellowish.
        Joints 3′–5′ long: longer spines ½′–1½′ long. 2. *O. humifusa.*
        Joints 6′–8′ long; longer spines 1′–2½′ long. 3. *O. tortispina.*
      Spines reddish brown to black; joints 6′–8′ long. 4. *O. Camanchica.*
  Fruit dry, with spine-bearing areolae.
    Joints orbicular or broadly obovate, flat. 5. *O. polyacantha.*
    Joints little flattened, ovoid, or subglobose. 6. *O. fragilis.*
Joints cylindric, or nearly so; stem erect. 7. *O. arborescens.*

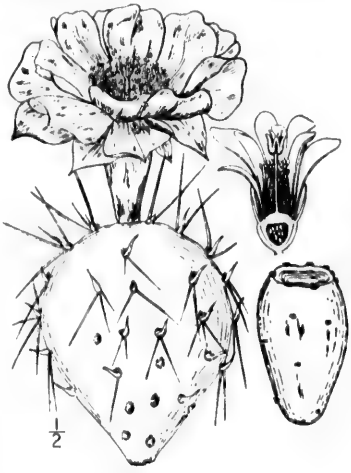
1. Opuntia Opúntia (L.) Coult. Eastern Prickly Pear. Indian Fig. (Fig. 2527.)

Cactus Opuntia L. Sp. Pl. 468. 1753.
Opuntia vulgaris Mill. Gard. Dict. Ed. 8, no. 1. 1768.
Opuntia Opuntia Coult. Contr. Nat. Herb. 3: 432. 1896.

Prostrate, or ascending, joints obovate, oblong, oval or orbicular, 2′–5′ long. Leaves subulate, appressed or somewhat spreading, 2″–4″ long, usually early deciduous; bristles greenish or yellowish brown; spines, when present, solitary, grayish or variegated, stout, not deflexed, 3″–1½′ long, often wanting; flowers yellow, sometimes with a reddish center, 2′–3′ broad; fruit obovoid, fleshy, edible, 1′–1½′ long, red.

In dry sandy soil, or on rocks, eastern Massachusetts to eastern Pennsylvania and Florida. June–Aug.





2. Opuntia humifûsa Raf. Western Prickly Pear. (Fig. 2528.)

Cactus humifusus Raf. Ann. Nat. 15. 1820.
Opuntia humifusa Raf. Med. Bot. 2: 247. 1830.
O. mesacantha Raf.; Ser. Bull. Bot. Gen. 216 1830.
O. Rafinesquii Engelm. Pac. R. R. Rep. 4: 41. 1856.

Prostrate, similar to the preceding species; joints obovate to suborbicular, or oval, usually deep green, 3′–5′ long; leaves subulate, spreading, 3″–5″ long; bristles reddish brown; spines few, mostly near the margins of the joints, 1–4 together, whitish, or reddish at base and apex, deflexed, or the longer one spreading and ½′–1′ long; flowers yellow, often with a reddish centre, 2½′–3½′ broad; fruit club-shaped, not spiny, fleshy, edible, 1½′–2′ long.

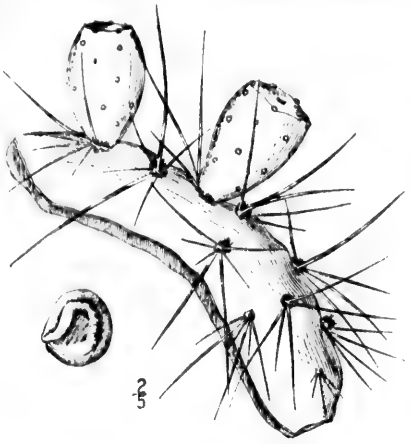
In dry sandy or rocky soil, Minnesota to Kentucky, Missouri and Texas. Summer. A variable species, of which several varieties are described.

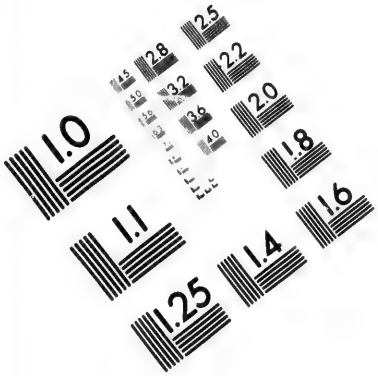
3. Opuntia tortispina Engelm. Twisted-spined Cactus. (Fig. 2529.)

Opuntia tortispina Engelm. Pac. R. R. Rep. 4: 21. 1856.

Stems prostrate, the orbicular-obovate flattened joints 6′–8′ long. Spines 3–5, white, angled and channeled, sometimes twisted, the longer ones 1½′–2½′ long, with 2–4 more slender and shorter ones; flowers sulphur-yellow, 2½′–3′ broad; fruit ovoid, fleshy, unarmed, about 2′ long and 1′ in diameter; seeds orbicular, slightly notched at the hilum, 2″–3″ wide.

Plains of Nebraska to Texas.

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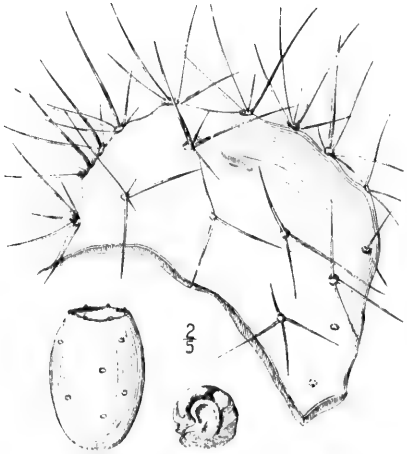


4. Opuntia Camánchica Engelm. Comanche Cactus. (Fig. 2530.)

Opuntia Camanchica Engelm. Pac. R. R. Rep. 4: 40. 1856.

Prostrate, with obovate-orbicular flattened joints 6′–8′ long, 5′–8′ wide. Spines 1–3, flattened, reddish brown to blackish, 1½′–3′ long, or with 3–6 additional shorter ones, the upper one suberect, the others deflexed or spreading; fruit oval, deep red, juicy, 1½′–2′ long; seeds angular, margined, deeply notched at the hilum, 2″–3″ broad.

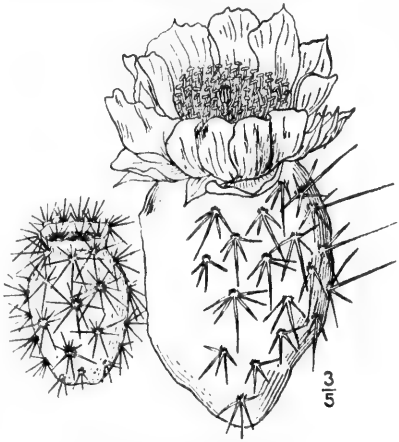
Western Kansas (according to Hitchcock), Colorado to Texas and Arizona.

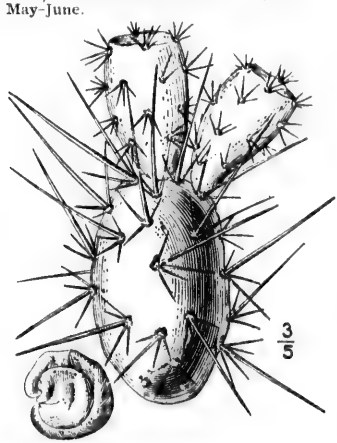
5. Opuntia polyacántha Haw. Many-spined Opuntia. (Fig. 2531.)

Cactus ferox Nutt. Gen. 1: 296. 1818. Not Willd. 1813.
Opuntia polyacantha Haw. Syn. Pl. Succ. Suppl. 82. 1819.
Opuntia Missouriensis DC. Prodr. 3: 472. 1828.

Prostrate, joints broadly obovate to orbicular, tubercled, 2′–6′ long, about 6″ thick, the tubercles 2″ high, densely spiny and with cushions of fine bristles; spines 5–12, slender, 6″–2′ long, whitish; leaves minute; flowers light yellow, 2′–3′ broad; fruit dry, very prickly, 1′–1¼′ long.

Prairies and dry soil, South Dakota to British Columbia, south to Nebraska, Missouri, Utah and New Mexico. Variable. May–June.



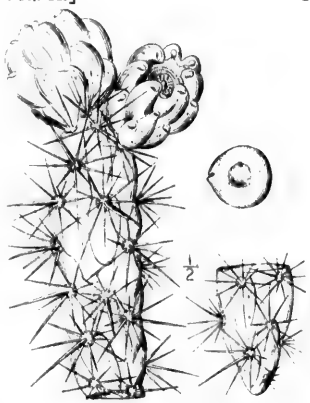


6. Opuntia frágilis (Nutt.) Haw. Brittle Opuntia. (Fig. 2532.)

Cactus fragilis Nutt. Gen. 1: 296. 1818.
Opuntia fragilis Haw. Syn. Pl. Succ. Suppl. 82. 1819.

Decumbent or prostrate; joints ovate, 1′–2′ long, somewhat flattened or nearly terete. Leaves very small, reddish; cushions composed of few bristles; central spines 1–4, ½′–1½′ long, gray, darker at the apex, surrounded by 4–6 smaller ones; flowers yellow, smaller than those of the preceding species; fruit nearly 1′ long, becoming dry at maturity, provided with cushions of bristles usually bearing a few short spines.

Prairies and dry soil, Wisconsin and Minnesota to Wyoming and Utah, south to Kansas and New Mexico.



7. Opuntia arboréscens Engelm. Northern Tree-like Cactus. (Fig. 2533.)

Opuntia arborescens Engelm. Wisliz. Rep. 6. 1848.

Erect, tree-like, 4°–25° high, 4′–8′ in diameter at the base, verticillately branched, the spiny branches spreading or drooping. Joints verticillate, mostly in 3's or 4's, cylindric, 2′–6′ long, less than 1′ in diameter, the prominent tubercles 7″–10″ long; leaves terete, spreading, 6″–10″ long; spines 8–30, terete, in yellowish sheaths, diverging, the interior ones the longer, often 1′ long or more; flowers purple, 2½′–3′ broad; fruit subglobose, crested-tuberculate, dry, or nearly so, yellow, unarmed, about 1′ in diameter; seeds smooth, 1½″–2″ wide.

Western Kansas (according to B. B. Smyth), Colorado to Texas, New Mexico and Mexico.

Family 83. THYMELEÀCEAE Reichenb. Consp. 82. 1828.

MEZEREON FAMILY.

Shrubs or trees (rarely herbaceous), with tough fibrous or reticulated inner bark, and simple entire exstipulate leaves. Flowers fascicled, capitate, racemose, or rarely solitary, regular, mostly perfect. Calyx inferior, its tube cylindric or urn-shaped, 4–5-lobed or entire. Petals none in our genera, present in many exotic ones. Stamens borne on the calyx, twice as many as its lobes, or rarely fewer, often in two series; filaments long or short; anthers erect, 2-celled, the sacs longitudinally dehiscent. Ovary 1-celled, 1-ovuled (2-celled and 2-ovuled in some Asiatic and Australasian genera); ovule anatropous, pendulous; style short or elongated; stigma terminal, mostly capitate. Fruit a berry-like drupe in our plants. Seed-coat mostly crustaceous; embryo straight; cotyledons fleshy; endosperm little or none, or copious in some exotic genera.

About 37 genera and 425 species, widely distributed, most abundant in Australia and South Africa.

Calyx-lobes 4, large; stamens included; style very short. 1. *Daphne.*
Calyx-limb almost wanting; stamens and style long, exserted. 2. *Dirca.*

1. DÁPHNE L. Sp. Pl. 356. 1753.

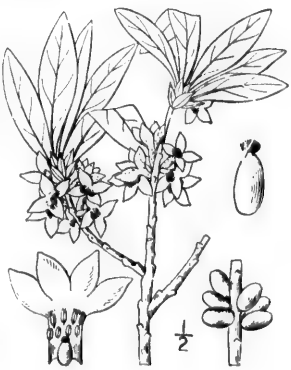
Erect or spreading shrubs, with alternate deciduous or evergreen leaves, and small purple pink or white flowers in fascicles, heads or racemes, borne in the following species at the leafless nodes of twigs of the preceding season. Perianth tubular, its 4 lobes spreading. Stamens 8, in 2 series on the perianth-tube, included, or the upper 4 slightly exserted; filaments very short. Disk none. Ovary sessile or nearly so, 1-celled; style very short; stigma large, capitate. Drupe ovoid, or oblong, the calyx deciduous or persistent.

About 40 species, natives of Europe and Asia.

1. Daphne Mezèreum L. Spurge Laurel. Lady Laurel. Mezereon. (Fig. 2534.)

Daphne Mezereum L. Sp. Pl. 356. 1753.

A shrub 1°–4° high, the young twigs somewhat pubescent. Leaves thin, deciduous, oblong-lanceolate or oblanceolate, acute or obtusish at the apex, 3′–5′ long, 4″–10″ wide, narrowed into short petioles; flowers in sessile fascicles of 2–5 at the nodes of twigs of the preceding season, very fragrant; perianth-tube appressed-pubescent, rose-purple or white, 6″ long or less, the ovate acute lobes nearly as long; drupe red, oval-ovoid, 3″–4″ long.



Escaped from cultivation, Quebec to Massachusetts and New York. Native of Europe and Asia. Called also Spurge Olive, Dwarf Bay, Paradise Plant. April–May.

2. DÍRCA L. Sp. Pl. 358. 1753.

Branching shrubs, with tough fibrous bark, alternate thin short-petioled deciduous leaves, and yellowish flowers in peduncled fascicles of 2–4 from scaly buds at the nodes of twigs of the preceding season, branches subsequently developing from the same nodes. Perianth campanulate or funnelform, its limb undulately obscurely 4-toothed. Stamens 8, borne on the perianth, exserted, the alternate ones longer; filaments very slender. Disk obsolete. Ovary nearly sessile, 1-celled; style filiform, exserted; stigma small, capitate. Drupe red, oval-oblong. [Named from a fountain in Thebes.]

Two known species, the following and *D. occidentalis* A. Gray, of California.

1. Dirca palústris L. Leatherwood. Moose-wood. (Fig. 2535.)

Dirca palustris L. Sp. Pl. 358. 1753.

A shrub, 2°–6° high, the twigs yellowish green, glabrous. Leaves oval, or obovate, obtuse at the apex, rounded or narrowed at the base, pubescent when young, glabrous, or very nearly so, and 2′–3′ long when mature; bud-scales 3 or 4, oval, or oblong, very pubescent with brown hairs, deciduous; peduncle about 2½″ long; flowers nearly sessile; perianth 2″–3″ long; style longer than the stamens; drupe about 6″ long.

In woods and thickets, mostly in wet soil, New Brunswick to Minnesota, Virginia and Missouri, and Florida (according to Chapman). Also called Swamp-wood. The bark produces violent vomiting; applied externally, it is an irritant to the skin. April–May

Family 84. ELAEAGNACEAE Lindl. Nat. Syst. Ed. 2. 194. 1836.

Oleaster Family.

Shrubs or trees, mostly silvery-scaly, or stellate-pubescent, with entire alternate or opposite leaves, and perfect polygamous or dioecious flowers clustered in the axils or at the nodes of twigs of the preceding season, rarely solitary. Lower part of the perianth of perfect or pistillate flowers tubular or urn-shaped, enclosing the ovary and persistent, the upper part 4-lobed or 4-cleft, deciduous (obscurely 2-lobed in the Old World *Hippophaë*); perianth of staminate flowers 4-parted (2-parted in *Hippophaë*). Corolla none. Stamens 4 or 8, those of perfect flowers borne on the throat of the perianth; filaments mostly short; anthers 2-celled, the sacs longitudinally dehiscent. Disk annular, or lobed. Ovary sessile, 1-celled; ovule 1, erect, anatropous; style slender. Fruit drupe-like, the perianth-base becoming thickened and enclosing the achene or nut. Seed erect; embryo straight; endosperm little or wanting.

Three known genera and about 20 species, widely distributed.

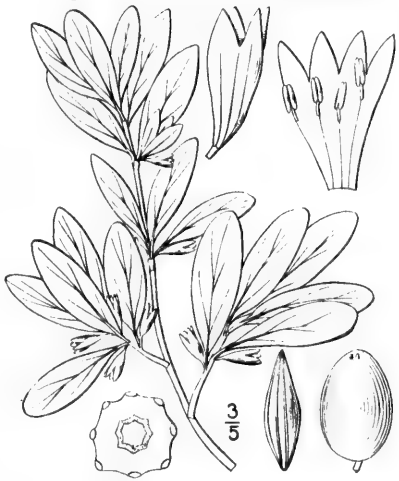
Stamens as many as the perianth-parts; flowers perfect or polygamous; leaves alternate. 1. *Elaeagnus.*

Stamens twice as many as the perianth-parts; flowers dioecious; leaves opposite. 2. *Lepargyraea.*

1. ELAEÁGNUS L. Sp. Pl. 121. 1753.

Silver-scaly shrubs, some exotic species trees, with alternate petioled leaves. Flowers solitary or 2–4 together in the axils, pedicelled, not bracted, perfect or polygamous. Perianth tubular below, constricted over the top of the ovary, the upper part campanulate or urn-shaped, 4-lobed, deciduous, the lobes valvate. Stamens 4, borne on the throat of the perianth. Style linear, long. Fruit drupe-like, the ripened perianth-base fleshy or mealy, enclosing the striate or grooved nut. [Greek, sacred olive.]

About 20 species, natives of Europe, Asia, Australia and North America. Only the following is known in North America.



1. Elaeagnus argéntea Pursh. Silver-berry. (Fig. 2536.)

Elaeagnus argentea Pursh, Fl. Am. Sept. 114. 1814.

Stoloniferous, much branched, sometimes 12° high, the young twigs covered with brown scurf, becoming silvery. Leaves oblong, ovate or oval-lanceolate, densely silvery-scurfy on both sides, acute or obtuse, short-petioled, 1′–4′ long; flowers usually numerous, 1 to 3 in the axils, fragrant, silvery, 6″–8″ long; perianth silvery without, yellowish within, its lobes ovate, about 1″ long; fruit oval, silvery, 4″–6″ long, the stone 8-striate.

James Bay to the Northwest Territory, south to Quebec, Minnesota, South Dakota and Utah. May-July. Fruit edible, ripe July-Aug.

2. LEPARGYRAÈA Raf. Am. Month. Mag. 2: 176. 1817.

[SHEPHERDIA Nutt. Gen. 2: 240. 1818.]

Shrubs, brown- or silvery-scurfy or stellate-pubescent, with opposite petioled leaves. Flowers small, dioecious, or sometimes polygamous, subspicate or fascicled at the nodes of the preceding season, or axillary, the pistillate few or sometimes solitary. Pistillate flowers with an urn-shaped or ovoid 4-lobed perianth, bearing an 8-lobed disk at its mouth which nearly closes it; style somewhat exserted. Staminate flowers with a 4-parted perianth and 8 stamens alternating with as many lobes of the disk; filaments short. Fruit drupe-like, the fleshy perianth-base enclosing a nut, or achene. [Greek, silvery-scaly.]

Three known species, the following and *L. rotundifolia* of Utah.

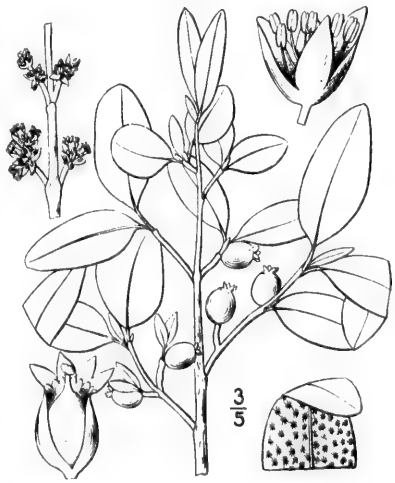
Leaves ovate or oval, green above, silvery beneath; shrub thornless. 1. *L. Canadensis.*
Leaves oblong, silvery on both sides; shrub mostly thorny. 2. *L. argentea.*

1. Lepargyraea Canadénsis (L.) Greene. Canadian Buffalo-berry. (Fig. 2537.)

Elaeagnus Canadensis L. Sp. Pl. 1024. 1753.
Shepherdia Canadensis Nutt. Gen. 2: 240. 1818.
Lepargyraea Canadensis Greene, Pittonia, 2: 122. 1890.

A thornless shrub, 4°–8° high, the young shoots brown-scurfy. Leaves ovate or oval, obtuse at the apex, rounded, or some of them narrowed at the base, 1′–1½′ long, green and sparingly stellate-scurfy above, densely silvery stellate-scurfy beneath, some of the scurf usually brown; petioles 2″–3″ long; flowers in short spikes at the nodes of the twigs, yellowish; buds globose, less than 1″ in diameter, forming in summer, expanding with or before the leaves early in the following spring; perianth about 2″ broad when expanded; fruit oval, red or yellowish, 2″–3″ long, the flesh insipid, the nut smooth.

On banks, especially along streams, Newfoundland to Saskatchewan and British Columbia, south to Vermont, New York, Michigan and Utah. April-June. Fruit ripe July-Aug.



2. Lepargyraea argéntea (Nutt.) Greene. Buffalo-berry. Rabbit-berry. (Fig. 2538.)

Elaeagnus argentea Nutt. Fraser's Cat. 1813.

Shepherdia argentea Nutt. Gen. 2: 241. 1818.

Lepargyraea argentea Greene, Pittonia, 2: 122. 1890.

A shrub, 6°–18° high, the twigs often terminating in thorns. Leaves oblong, or sometimes oblong-lanceolate, 1′–2′ long, rarely more than ½′ wide, obtuse at the apex, usually cuneate-narrowed at the base, densely silvery-scurfy on both sides; petioles 2″–6″ long; flowers fascicled at the nodes, the globose buds very silvery; fruit oval, or ovoid, scarlet, sour, 2″–3″ long, edible.

Manitoba and Minnesota to Saskatchewan, Kansas and Nevada. April–May. Called also Beef-suet Tree, Silver Leaf. Fruit ripe July–Aug.

Family 85. **LYTHRÀCEAE** Lindl. Nat. Syst. Ed. 2, 100. 1836.

LOOSESTRIFE FAMILY.

Herbs, shrubs, or often trees in tropical regions, mostly with opposite leaves and solitary or clustered perfect flowers. Stipules usually none. Calyx persistent, free from the ovary, but generally enclosing it, the limb toothed and often with accessory teeth in the sinuses. Petals as many as the primary calyx-teeth or none, inserted on the calyx. Disk annular or none. Stamens various, inserted on the calyx. Anthers versatile, longitudinally dehiscent. Ovary sessile or stipitate, 2–6-celled or sometimes 1-celled; style 1; stigma capitate or 2-lobed; ovules ∞, rarely few, anatropous. Capsule 1–several-celled, variously dehiscent or sometimes indehiscent. Seeds without endosperm; cotyledons flat, often auricled at the base.

About 21 genera and 350 species, of wide geographic distribution, most abundant in tropical America.

Calyx-tube campanulate or hemispheric; flowers regular.	
Flowers small, axillary, solitary or few; low herbs.	
Petals 4 in our species; capsule bursting irregularly.	1. *Ammannia.*
Petals none; capsule indehiscent.	2. *Didiplis.*
Petals 4; capsule septicidally dehiscent.	3. *Rotala.*
Flowers large, in axillary cymes; large aquatic shrub.	4. *Decodon.*
Calyx-tube cylindric; flowers regular.	5. *Lythrum.*
Calyx-tube tubular, oblique; flowers irregular.	6. *Parsonsia.*

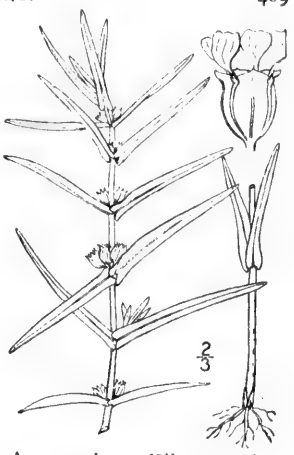
1. AMMÁNNIA L. Sp. Pl. 119. 1753.

Annual glabrous or glabrate herbs, mostly with 4-angled stems, opposite sessile narrow leaves, and small axillary solitary or clustered flowers. Calyx campanulate, globose or ovoid, 4-angled, 4-toothed, often with small accessory teeth in the sinuses. Petals 4 in our species, deciduous. Stamens 4–8, inserted on the calyx-tube; filaments slender or short. Ovary enclosed in the calyx-tube, nearly globular, 2–4-celled, bursting irregularly. [Named for Johann Ammann, 1699–1741, a German botanist.]

About 20 species, of wide geographic distribution, most abundant in warm regions. Besides the following, another occurs in the Southern States.

Flowers sessile, solitary, or 2–3 together.	
Leaves linear-lanceolate, acuminate; style elongated.	1. *A. coccinea.*
Leaves obovate or oblanceolate, obtuse; style very short.	2. *A. Koehnei.*
Flowers pedicelled, in axillary cymes.	3. *A. auriculata.*

1. Ammannia coccínea Rottb. Long-leaved Ammannia. (Fig. 2539.)



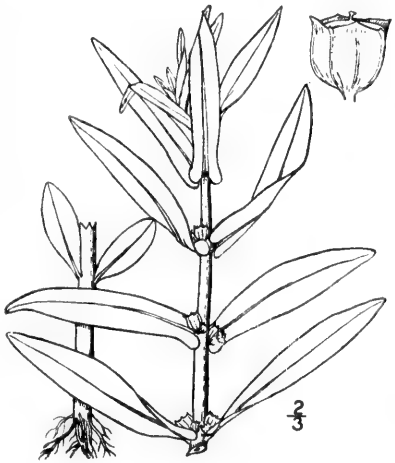
Ammannia coccinea Rottb. Pl. Hort. Havn. Descr. 7. 1773.

Ammannia latifolia T. & G. Fl. N. A. 1: 480. 1840. Not L. 1753.

Erect, glabrous, branching below, 6′–20′ high. Leaves linear-lanceolate, all obtusely cordate-auriculate and dilated at the somewhat clasping base, acuminate or acute at the apex, entire, 1′–3′ long, 1″–3″ wide; flowers 1–5 in each axil, sessile or very nearly so; petals purple, fugacious; style elongated, very slender, usually more than one-half the length of the capsule.

In swamps, southern Indiana and Iowa to Kansas, south to Florida, Louisiana, Texas, Mexico and Brazil. Also on the Pacific Islands. We have seen no specimens from east of the Alleghanies. July–Sept.

2. Ammannia Koèhnei Britton. Koehne's Ammannia. (Fig. 2540.)



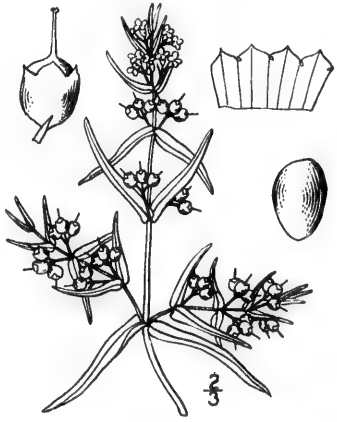
Ammannia Koehnei Britton, Bull. Torr. Club, 18: 271. 1891.

Ammannia humilis β T. & G. Fl. N. A. 1: 480. 1840.

Erect, glabrous, 6′–20′ high, at length freely branching. Leaves obovate, oblanceolate, or somewhat spatulate, obtuse or obtusish at the apex, the upper ones clasping and more or less auriculate at the base, the lower narrowed and sessile or tapering into a short petiole; flowers 1–3 together in the axils, sessile; petals purple (?), fugacious; stamens very short, not exserted; style very short; capsule enclosed by the calyx.

In swamps, Hackensack marshes, N. J., to Florida. July–Sept.

3. Ammannia auriculàta Willd. Wright's Ammannia. (Fig. 2541.)



Ammannia auriculata Willd. Hort. Berol. 7. *pl.* 7. 1806.

Ammannia Wrightii A. Gray, Pl. Wright. 2: 55. 1853.

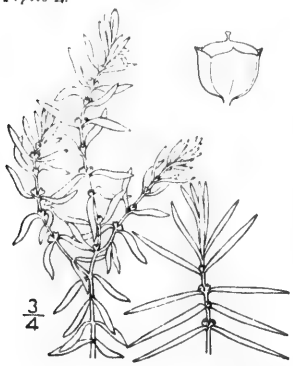
Erect, 2′–10′ high, at length widely branching. Leaves sessile, linear-lanceolate or oblong, acute or acutish at the apex, auriculate at the base, ½′–1½′ long, about 2″ wide; flowers in axillary peduncled cymes; pedicels ½″–1½″ long; petals purple; style slender; stamens exserted; capsule partly enclosed by the calyx.

Nebraska and Kansas to Texas, Ecuador and Brazil. Also in Asia and Africa. May–June.

2. DÍDIPLIS Raf. Atl. Journ. 177. 1833.

Aquatic or marsh plants, rooting in the mud, with 4-angled stems, opposite linear entire leaves, and very small axillary solitary green flowers. Calyx hemispheric or campanulate, 4-lobed, with no accessory teeth. Petals none. Stamens 2–4, usually 4, inserted on the calyx-tube; filaments very short. Ovary globose, enclosed by the calyx, 2-celled; style scarcely any; stigma obscurely 2-lobed; ovules ∞. Capsule globose, indehiscent, 2-celled. [Greek, twice double.]

A monotypic genus of east-central North America, closely related to the Old World genus *Peplis* L.



1. Didiplis diándra (Nutt.) Wood. Water Purslane. (Fig. 2542.)

Callitriche autumnalis (?) Michx. Fl. Bor. Am. 1: 2. 1803. Not L. 1753.
Peplis (?) *diandra* Nutt.; DC. Prodr. 3: 77. 1828.
Didiplis linearis Raf. Atl. Journ. 177. 1833.
Didiplis diandra Wood. Bot. & Fl. 124. 1870.

Submersed or rooting in the mud on shores, glabrous, 3′–12′ long. Submersed leaves thin, elongated-linear or lanceolate, acute or acuminate at the apex, broader at the base, 6″–10″ long; emersed leaves linear-oblong, narrowed at the base; flowers inconspicuous, about ½″ long; capsule about ½″ in diameter.

Minnesota and Wisconsin to Texas and Mexico, east to North Carolina and Florida. Resembling *Callitriche* in habit. June–Aug.

3. ROTÀLA L. Mant. 2: 175. 1771.

Low annual mainly glabrous herbs, usually with opposite sessile or sometimes petioled leaves, 4-angled stems, and axillary mainly solitary small flowers. Calyx campanulate or globose, 4-lobed. Petals 4 in our species. Stamens 4, short. Ovary free from the calyx, globose, 4-celled. Capsule globose, enclosed by the membranous calyx, 4-celled, septicidally dehiscent, the valves very minutely and densely striate transversely. [Latin, wheel, from the whorled leaves of some species.]

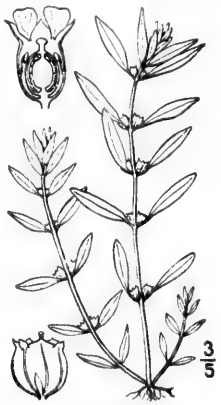
About 30 species, of wide geographic distribution in warm and tropical regions. In addition to the following, another may occur in the southwestern States.

1. Rotala ramòsior (L.) Koehne. Rotala. (Fig. 2543.)

Ammannia ramosior L. Sp. Pl. 120. 1753.
Ammannia humilis Michx. Fl. Bor. Am. 1: 99. 1803.
Boykinia humilis Raf. Aut. Bot. 9. 1840.
Rotala ramosior Koehne, in Mart. Fl. Bras. 13: Part 2, 194. 1875.

Glabrous, branched from the base or simple, ascending or erect, 2′–6′ high. Leaves oblong or linear-oblong, 6″–15″ long, 1″–3″ wide, blunt at the apex, narrowed and sessile at the base or tapering into a short petiole, not auricled; flowers solitary or rarely 3 in the axils, very small; petals minute; style almost none.

In swamps, Massachusetts to Florida, west to northern Illinois, Nebraska, Texas and Mexico. Also in California, Oregon, South America and the West Indies. July–Sept.



4. DÉCODON J. F. Gmel. Syst. Veg. 2: 677. 1791.

Herbaceous shrubs, with verticillate or opposite, short-petioled entire leaves, and showy purple pedicelled trimorphous flowers, in nearly sessile axillary cymes. Calyx broadly campanulate, or hemispheric, nerved, 5–7-toothed, with as many slender elongated accessory teeth in the sinuses. Stamens 10, rarely 8, alternately longer and shorter, inserted on

the calyx-tube, the longer exserted. Style filiform; stigma small. Capsule globose, 3–5-celled, included in the calyx, loculicidally dehiscent. [Greek, ten-toothed, referring to the calyx.]

A monotypic genus of eastern North America.

1. Decodon verticillàtus (L.) Ell. Swamp Loosestrife or Willow-herb. (Fig. 2544.)

Lythrum verticillatum L. Sp. Pl. 446. 1753.
Decodon aquaticus J. F. Gmel. Syst. 2: 677. 1791.
Decodon verticillatus Ell. Bot. S. C. & Ga. 1: 544. 1821.
Nesaea verticillata H.B.K. Nov. Gen. 6: 191. 1823.

Aquatic, perennial, somewhat woody, with angular recurved glabrous or slightly pubescent stems 3°–10° long, which root from the tip when they reach the water or mud. Leaves lanceolate, 2′–5′ long, 4″–12″ wide, glabrous above, somewhat pubescent beneath, acute at both ends; petioles 2″–4″ long; cymes several-flowered; flowers nearly 1′ broad; petals cuneate at the base, pink-purple; filaments of the longer stamens very slender; capsule about 2½″ in diameter.

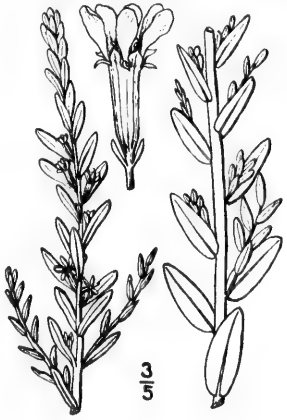
In swamps, Rhode Island and Massachusetts to Florida, west to southern Ontario, Minnesota, Kentucky and Louisiana. Stems clothed with aerenchyma at the base. Flowers rarely double. Ascends to 2000 ft. in Pennsylvania. July–Sept.

5. LÝTHRUM L. Sp. Pl. 446. 1753.

Herbs or shrubs, with 4-angled stems, opposite alternate or rarely verticillate entire leaves, and solitary cymose-paniculate or spicate and terminal often dimorphous or trimorphous flowers. Calyx-tube cylindric, 8–12-ribbed, straight, not gibbous at the base, with 4–6 primary teeth and an equal number of accessory ones in the sinuses. Petals 4–6, usually obovate, rarely wanting. Stamens 8–12, inserted on the calyx-tube, included or exserted. Ovary oblong, sessile, 2-celled; style filiform; stigma mostly capitate; ovules numerous. Capsules enclosed by the calyx, membranous, 2-celled, 2-valved, or bursting irregularly. Seeds flat or angular. [Greek, gore, from the purple color of the flowers.]

About 23 species, of wide geographic distribution. Besides the following, about 4 others occur in the southern and western United States.

Flowers axillary, solitary; stamens not more numerous than petals.
  Leaves mostly alternate.
    Leaves obtuse; stamens all included; annual. 1. *L. Hyssopifolia.*
    Leaves acute; stamens of short-styled flowers exserted; perennial. 2. *L. alatum.*
  Leaves mostly opposite.
    Leaves narrowly linear, narrowed at the base. 3. *L. lineare.*
    Leaves ovate or oval, rounded or cordate at the base. 4. *L. Vulneraria.*
Flowers in spicate panicles, terminal; stamens twice as many as petals. 5. *L. Salicaria.*



1. Lythrum Hyssopifòlia L. Hyssop Loosestrife. Grass Poly. (Fig. 2545.)

Lythrum Hyssopifolia L. Sp. Pl. 447. 1753.

Annual, glabrous, pale green, erect or assurgent, at length widely branched, 6′–24′ high. Leaves sessile, mainly alternate, the lowest sometimes opposite, oblong or linear-oblong, obtuse at the apex, rounded at the base, 4″–10″ long, 1″–4″ wide, those of the main stem larger than those of the branches; flowers solitary and sessile in the axils, not dimorphous, pink-purple, about ¼″ broad; petals nearly erect; stamens all included; calyx 2½″–3″ long in fruit.

Borders of salt marshes, Maine to New Jersey. Also in California and along the coast of South America. Naturalized from Europe. Widely distributed in the Old World. June–Sept.

2. Lythrum alàtum Pursh. Wing-angled Loosestrife. (Fig. 2546.)

Lythrum alatum Pursh, Fl. Am. Sept. 334. 1814.

Perennial, erect, glabrous, usually much branched, dark green, 1°–4° high, the stem angled and often slightly winged. Leaves sessile, alternate or the lowest opposite, lanceolate or oblong, acute or acutish at the apex, rounded or cordate at the base, 6″–15″ long, 2″–5″ wide; flowers solitary in the upper axils, short-pedicelled, deep purple, 3″–5″ broad, dimorphous; petals erect-spreading; stamens of the short-styled flowers exserted; hypogynous ring fleshy; ovary nearly sessile; calyx 2½″–3″ long in fruit.

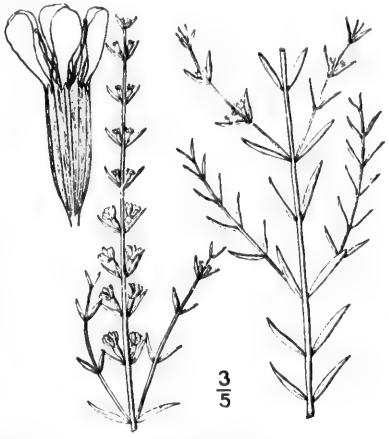
In low grounds, southern Ontario to Massachusetts, Kentucky (and Georgia?), west to Minnesota and Arkansas. The closely related *L. lanceolatum* Ell. of the southern states has the leaves narrowed or cuneate at the base. June-Aug.

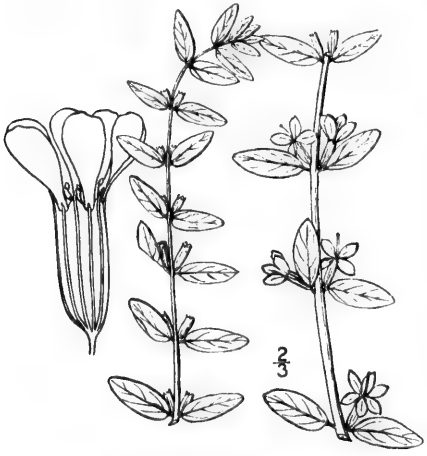
3. Lythrum lineàre L. Linear-leaved Loosestrife. (Fig. 2547.)

Lythrum lineare L. Sp. Pl. 447. 1753.

Perennial, slender, glabrous, rather pale green, much branched, 2°–4° high. Leaves narrowly linear, sessile, 6″–12″ long, 1″–2″ wide, nearly all opposite, acutish at the apex or the lowest obtuse, narrowed at the base; flowers solitary in the upper axils, light purple or nearly white, dimorphous, about 1½″ broad; stamens of the short-styled flowers exserted; hypogynous ring none; ovary short-stalked; fruiting calyx 1½″–2″ long.

Borders of salt marshes, New Jersey to Florida, west to Texas. July-Sept.





4. Lythrum Vulnerària Ait. Kennedy's Loosestrife. (Fig. 2548.)

Lythrum Vulneraria Ait.; Schrank. Hort. Monac. *pl.* 27. 1819.
Lythrum Kennedyanum H.B.K. Nov. Gen. 6: 194. 1823.

Spreading or ascending, perennial, glabrous, 1°–4° long, much branched. Leaves nearly all opposite, short-petioled, or sessile, 4″–9″ long, 2″–4″ wide, ovate, ovate-lanceolate or oval, rounded or cordate at the base, mostly obtuse at the apex; flowers solitary in the axils, usually short-peduncled, purple, about 4″ broad; stamens of the short-styled flowers exserted; hypogynous disk fleshy; fruiting calyx 4″–5″ long.

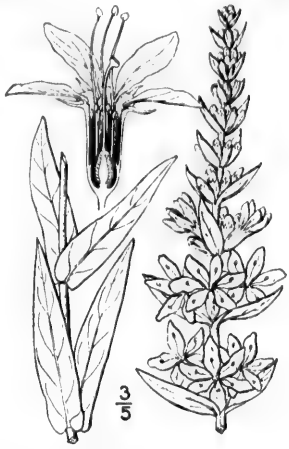
St. Louis, Mo. (according to Koehne), Florida to Mexico. May-Aug.

5. Lythrum Salicària L. Spiked or Purple Loosestrife. (Fig. 2549.)

Lythrum Salicaria L. Sp. Pl. 446. 1753.

Perennial, erect, 2°–3° high, glabrous or pubescent, at length much branched. Leaves opposite or sometimes verticillate in 3's, sessile, lanceolate, cordate or clasping at the base, 2′–3′ long, 3″–5″ wide; flowers purple, trimorphous, 6″–8″ broad, in dense compound terminal interrupted bracted spikes; stamens 8–10, alternately longer and shorter, even the longer ones little exserted; ovary short-stalked; fruiting calyx about 3″ long.

In swamps and wet meadows, Cape Breton Island to Ontario, south to southern New York and Delaware. Said to be naturalized from Europe. June–Aug. Widely distributed in the Old World. English names, Spiked Willow-herb, Long Purples, Soldiers.



6. PARSÓNSIA P. Br. Civ. & Nat. Hist. Jamaica, 199. 1756.

[Cuphea P. Br. Civ. & Nat. Hist. Jamaica, 216. 1756.]

Herbs (or shrubs in tropical regions), with opposite or verticillate leaves. Flowers showy, solitary or racemose, axillary, irregular and unsymmetrical. Calyx-tube elongated, tubular, 12-ribbed, gibbous or spurred at the base, oblique at the mouth, with 6 primary teeth and usually as many accessory ones. Petals 6, unequal. Stamens 11 (sometimes 12 in our species), inserted on the throat of the calyx, unequal; filaments short. Ovary sessile or obliquely stipitate, with a curved gland at its base, unequally 2-celled; ovules several or numerous; style slender; stigma 2-lobed. Capsule included in the calyx, oblong, 1-celled, laterally dehiscent. Seeds flattened. [In honor of James Parsons, M. D., a Scotch botanist.]

About 180 species, natives of America. Besides the following, 2 others occur in the southern States.

1. Parsonsia petiolàta (L.) Rusby. Blue Wax-weed. Clammy Cuphea. Tar-weed. (Fig. 2550.)

Lythrum petiolatum L. Sp. Pl. 446. 1753.
Cuphea viscosissima Jacq. Hort. Vind. 2: 83. *pl. 177.* 1772.
Cuphea petiolata Koehne, Engler's Bot. Jahrb. 2: 173. 1882.
Parsonsia petiolata Rusby, Mem. Torr. Club, 5: 231. 1894.

Annual, erect, very viscid-pubescent, branched, 6′–20′ high. Leaves slender-petioled, ovate-lanceolate, scabrous, mostly rounded at the base and blunt-pointed at the apex, 1′–1½′ long; flowers axillary, short-peduncled, purple, 3″–4″ broad; petals ovate, clawed; stamens sometimes 12; fruiting calyx swollen, about 4″ long; capsule dehiscent before the seeds are ripe, the placenta projecting through the lateral orifice.

In dry soil, Rhode Island to northern Illinois and Kansas, south to Georgia and Louisiana. Introduced into southern Ontario. Ascends to 3300 ft. in West Virginia. July–Oct.

Family 86. **MELASTOMÀCEAE** R. Br. Exp. Congo, App. 5. 1818.

Meadow-Beauty Family.

Herbs (shrubs or trees in tropical regions), with opposite 3–9-nerved simple leaves, and regular perfect often showy but rarely odorous, generally clustered flowers. Stipules none. Calyx-tube adnate to or free from the ovary, usually 4–5-lobed, the lobes imbricated. Petals as many as the lobes of the calyx, and inserted on its throat, more or less oblique, imbricated. Stamens twice as many, or equal in number to the petals, often inclined or declined, the alternate ones

sometimes shorter; anthers opening by a pore in our species. Ovary 2–several-celled (often 4-celled); style terminal, simple; stigma simple or lobed; ovules ∞, anatropous. Capsule included in the calyx-tube, irregularly or loculicidally dehiscent. Seeds mainly small, with no endosperm.

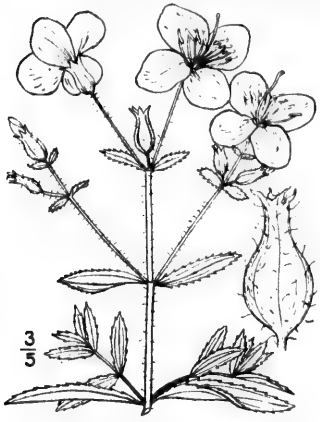
About 150 genera and 2500 species, widely distributed in tropical regions, most abundant in South America; represented in North America, only by the following genus.

1. RHÉXIA L. Sp. Pl. 346. 1753.

Perennial herbs, often somewhat woody at the base, sometimes tuber-bearing, with mostly sessile opposite 3–5-nerved leaves, and terminal showy cymose or rarely solitary flowers. Calyx-tube urn-shaped or campanulate, constricted at the neck, its limb 4-lobed, the lobes triangular or subulate, shorter than the tube. Petals 4, obovate, oblique, rounded retuse, or aristate at the apex. Stamens 8, equal; anthers linear or oblong, incurved or inverted in the bud. Ovary free from the calyx, glabrous, 4-celled; style slender; stigma truncate. Capsule 4-celled, 4-valved. Placentae 4, central. Seeds numerous, coiled or bent, rough. [Greek, breaking, applied originally to a different plant.]

Ten known species, natives of eastern North America.

Stem cylindric, very pubescent. 1. *R. Mariana.*
Stem square or angled, pubescent or glabrous.
  Stem more or less pubescent; leaves ovate. 2. *R. Virginica.*
  Stem glabrous.
    Leaves oblong or lance-oblong; calyx with a few hairs above. 3. *R. aristosa.*
    Leaves ovate, bristly-ciliate; calyx glabrous. 4. *R. ciliosa.*



1. Rhexia Mariàna L. Maryland Meadow-Beauty. (Fig. 2551.)

Rhexia Mariana L. Sp. Pl. 346. 1753.

Stem rather slender, cylindric, simple, or branched above, very hirsute-pubescent, 1°–2° high. Leaves spreading, short-petioled, oblong, or linear-oblong, mostly acute at the apex, narrowed at the base, 1′–1½′ long, 2″–5″ wide, pubescent with scattered bristly hairs on both surfaces, 3-nerved, the margins ciliate-serrulate; flowers loosely cymose, pedicelled, pale purple, about 1′ broad; pedicels and calyx-tube glandular-pubescent; petals rounded; anthers linear, curved, minutely spurred on the back.

In swamps, pine-barrens of New Jersey to Florida, west to Kentucky, Missouri and Texas. June–Sept.

2. Rhexia Virgínica L. Meadow-Beauty. Deer-Grass. (Fig. 2552.)

Rhexia Virginica L. Sp. Pl. 346. 1753.

Stem rather stout, simple or branched above, square, the angles often slightly winged, more or less pubescent, 1°–1½° high. Leaves ascending, sessile, ovate or ovate-oval, acute or acutish at the apex, rounded or rarely narrowed at the base, 1′–2′ long, 6″–12″ wide, usually with a few scattered hairs on both surfaces, mostly 5-nerved, the margins ciliate-serrulate; flowers bright purple, cymose, short-pedicelled, 1′–1½′ broad; calyx-tube and pedicels glandular-pubescent; petals rounded or slightly retuse; anthers linear, curved, minutely spurred on the back.

In sandy swamps, Maine to Florida, west to northern New York, Illinois, Missouri and Louisiana. Ascends to 2000 ft. in Pennsylvania. July–Sept.

3. Rhexia aristòsa Britton. Awn-petaled Meadow-Beauty. (Fig. 2553.)

Rhexia aristosa Britton, Bull. Torr. Club, 27: 14. *pl. 99.* 1890.

Stem square, slender, glabrous, branched or simple 1½°–2° high. Leaves sessile, erect, oblong or linear-oblong, obtusish at each end, 9″–15″ long, 1½″–3″ wide, 3-nerved, serrate toward the apex with appressed subulate teeth, glabrous or very nearly so beneath, but with a few scattered hairs above; flowers 1–4 together, short-pedicelled, magenta-red, 1′–1½′ broad; summit of the calyx-tube and its linear lobes with scattered subulate hairs; petals rounded, but obtusely pointed and aristate at the apex; anthers linear, minutely spurred on the back.

In sandy swamps, pine-barrens of New Jersey, Delaware and South Carolina. Base of the stem with a coating of spongy tissue when growing in water. July–Aug.

4. Rhexia ciliòsa Michx. Ciliate Meadow-Beauty. (Fig. 2554.)

Rhexia petiolata Walt. Fl. Car. 130. 1788. (?)
Rhexia ciliosa Michx. Fl. Bor. Am. 1: 221. 1803.

Stem square, glabrous, simple or nearly so, 1°–2° high. Leaves ascending, ovate, very short-petioled, or sessile, acutish at the apex, mostly rounded at the base, 6″–10″ long, 4″–6″ wide, 3-nerved, glabrous or nearly so beneath, pubescent with a few scattered hairs above, the margins bristly-ciliate; cyme few-flowered; flowers very short-pedicelled, violet-purple, 1′–1½′ broad; calyx glabrous, or with a few hairs on its lobes; petals rounded, sometimes apiculate; anthers oblong, straight, not spurred on the back.

In swamps, Maryland to Florida, west to Louisiana. June–Aug.

Family 87. **ONAGRÀCEAE** Dumort. Anal. Fam. 36. 1829.*

EVENING-PRIMROSE FAMILY.

Annual or perennial herbs, rarely shrubs, with alternate or opposite leaves, no stipules or mere glands in their places, and axillary spicate or racemose generally perfect regular or sometimes irregular flowers. Calyx-tube adnate to the ovary, often prolonged beyond it, the limb 2–6-lobed (usually 4-lobed). Petals 2–9 (usually 4), convolute in the bud, rarely none. Stamens usually as many or twice as many as the petals, inserted with them on the summit of the calyx-tube, or on the epigynous or perigynous disk. Ovary 1–6-celled (usually 4-celled); styles united; stigma capitate, discoid or 4-lobed; ovules ∞ in each cavity, generally anatropous. Fruit a capsule or small nut. Seeds mostly small; endosperm very little or none; embryo straight.

Forty genera and about 350 species of wide geographic distribution, most abundant in America.

Floral whorls of 4 parts or more.
- Fruit a many-seeded capsule, opening by valves or by a pore.
  - Calyx-tube not prolonged beyond the ovary.
    - Seeds naked.
      - Stamens 4, in 1 row.
        - Leaves opposite; stems creeping or floating.
          - Flowers sessile; petals none, or very small; leaves petioled; capsules sessile, short, the top flat. 1. *Isnardia.*
          - Flowers long-stalked; petals conspicuous; leaves sessile; capsules elongated, curved, with a prominent 4-lobed stylopodium. 2. *Ludwigiantha.*
        - Leaves alternate; stems erect or ascending. 3. *Ludwigia.*
      - Stamens 8–12, in 2 rows. 4. *Jussiaea.*
    - Seeds furnished with a tuft of silky hairs. 5. *Chamaenerion.*

* Text revised by Dr. JOHN K. SMALL.

Calyx-tube prolonged beyond the ovary.
Seeds furnished with a tuft of silky hairs. 6. *Epilobium.*
Seeds naked or sometimes tuberculate.
Stamens equal in length.
Stigma deeply 4-cleft, its segments linear.
Ovules and seeds horizontal, inserted in 2 or rarely more rows, prismatic-angled. 7. *Onagra.*
Ovules and seeds ascending, not angled.
Buds erect; petals yellow; ovules and seeds in 2 rows. 8. *OEnothera.*
Buds drooping; petals white or pink; ovules and seeds in 1 row. 9. *Anogra.*
Stigmas entire or slightly 4-toothed.
Calyx-tube longer than the ovary; stigma disk-like, entire. 16. *Galpinsia.*
Calyx-tube shorter than the ovary; stigma disk-like, slightly 4-toothed. 17. *Meriolix.*
Stamens unequal in length, the alternate longer.
Ovules and seeds many, clustered, on slender funiculi; capsules club-shaped.
Flowers yellow. 10. *Kneiffia.*
Flowers white, pink or reddish. 11. *Hartmannia.*
Ovules or seeds few, sessile, in 1 or 2 rows.
Plants normally acaulescent.
Capsules obtusely or retusely 4-angled; seeds furrowed along the raphe. 12. *Pachylophus.*
Capsules sharply 4-angled or winged; seeds with a tubercle at one end. 13. *Lavauxia.*
Plants caulescent.
Stems wiry, diffuse; capsules sharply 4-angled. 14. *Gaurella.*
Stems stout, not diffuse; capsules 4-winged. 15. *Megapterium.*
Fruit indehiscent, nut-like.
Calyx-tube obconic; filaments with scales at the base; ovary 4-celled. 18. *Gaura.*
Calyx-tube filiform; filaments unappendaged; ovary 1-celled. 19. *Stenosiphon.*
Floral whorls of 2 parts. 20. *Circaea.*

1. ISNÀRDIA L. Sp. Pl. 120. 1753.

Annual or perennial succulent herbs. Stems prostrate or decumbent, creeping or floating; leaves opposite, fleshy, narrowed into petioles which are slightly shorter than the blades. Flowers perfect, axillary, sessile, commonly apetalous. Calyx turbinate, its segments 4, shorter than the tube or slightly longer, persistent. Petals none, or 4, inconspicuous. Stamens 4; filaments very short; anthers ovoid or oblong. Ovary 4-celled, very short; styles often almost wanting; stigma 4-lobed; ovules numerous, in several rows. Capsule 4-angled, obovoid or turbinate, straight, flat at the apex, septicidal. Seeds numerous, often tranversely wrinkled. [In honor of Antoine Dante Isnard, a French botanist, and a member of the Academy of Sciences, died 1724.]

About 4 species in North America and Mexico.

1. Isnardia palústris L. Marsh Purslane. (Fig. 2555.)

Isnardia palustris L. Sp. Pl. 120. 1753.
Ludwigia palustris Ell. Bot. S. C. 1: 211. 1817.

Procumbent or floating, glabrous, rooting at the nodes, succulent. Stems branching, 4′–15′ long; leaves opposite, oval, ovate or spatulate, acute or obtuse at the apex, 6″–12″ long, narrowed into a slender petiole; flowers axillary, solitary, sessile, about 1″ broad; bractlets at base of the calyx usually none; calyx lobes triangular, acute; petals small, reddish or often wanting; capsule 4-sided, slightly longer than wide, about 1½″ high, slightly exceeding the calyx lobes.

In muddy ditches and swamps, Nova Scotia to Manitoba and Oregon, Florida, Louisiana, California and Mexico. Widely distributed in the Old World. Also called False Loosestrife, Water Purslane. June–Nov.

2. LUDWIGIÁNTHA Small, Bull. Torr. Club, 24: 178. 1897.

Annual or perennial fleshy herbs. Stems prostrate, creeping, usually little branched; leaves opposite, sessile, leathery, numerous. Flowers perfect, yellow, on slender bracted peduncles which are 2–3 times longer than the leaves. Calyx narrowly obconic, its 4 segments narrow, longer than the tube. Petals conspicuous, surpassing the calyx-segments. Stamens 4; filaments elongated, very slender; anthers ovoid. Ovary 4-celled; united styles filiform, elongated; stigma 4-lobed; ovules numerous. Capsules club-shaped, curved

at the base at a right angle to the peduncle, about as long as the persistent calyx-segments, crowned by a prominent 4-lobed stylopodium. [Derivation as in the following genus.]

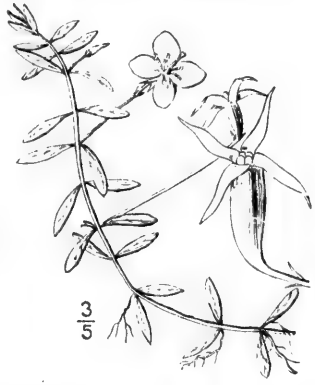
A monotypic genus of the southeastern United States.

1. Ludwigiantha arcuàta (Walt.) Small. Curved-podded Ludwigiantha. (Fig. 2556.)

Ludwigia arcuata Walt. Fl. Car. 89. 1788.
Ludwigiantha arcuata Small, Bull. Torr. Club, 24: 178. 1897.

Creeping or floating, rooting at the nodes, glabrous or nearly so, little branched, 3′–12′ long. Leaves opposite, oblanceolate, sessile, leathery, smooth, obtusish at the apex, narrowed at the base, 6″–12″ long; flowers axillary, solitary, bright yellow, 4″–6″ broad on filiform, 2-bracted peduncles much longer than the leaves; calyx-lobes linear-lanceolate, acuminate, shorter than the obovate petals; capsule club-shaped, somewhat curved, glabrous, about 4″–5″ long, equalling or slightly longer than the calyx-lobes.

In swamps, Virginia to Florida. May-July.



3. LUDWÍGIA L. Sp. Pl. 118. 1753.

Perennial or annual herbs, with alternate usually entire leaves, and axillary or terminal, yellow or greenish flowers. Stems erect or ascending, sometimes angled, or winged. Calyx-tube cylindric, obpyramidal or top-shaped, not prolonged beyond the ovary, 3–5-lobed (usually 4-lobed), the lobes generally persistent. Petals usually 4 sometimes none, inserted under the margin of the disk. Stamens usually 4, inserted with the petals; filaments short. Ovary 4–5-celled; stigma capitate or 4-lobed. Capsule terete, ribbed or winged, crowned with the calyx-lobes, many-seeded, septicidally or irregularly dehiscent, or opening by an apical pore. [Named in honor of C. G. Ludwig, 1709–1773, Professor of Botany at Leipsic.]

About 25 species, natives of warm and temperate regions, most abundant in North America. Besides the following about 10 others occur in the southern and southwestern States.

Flowers inconspicuous; petals none, or small, yellowish or greenish; valves of the capsule separating from the terminal disk.
- Capsules subglobose or top-shaped.
  - Bractlets at the base of the calyx minute, or none; capsule subglobose, finely pubescent. 1. *L. sphaerocarpa.*
  - Bractlets at the base of the calyx linear, about equalling the capsule; capsule top-shaped, glabrous. 2. *L. polycarpa.*
- Capsules cylindric or obpyramidal.
  - Capsules cylindric. 3. *L. glandulosa.*
  - Capsules obpyramidal.
    - Capsules as long as broad, or broader, the angles winged. 4. *L. alata.*
    - Capsules several times longer than broad, the angles obtuse. 5. *L. linearis.*

Flowers showy, peduncled; petals large, bright yellow; capsules opening by an apical pore.
- Plants hirsute; capsules bristly pubescent. 6. *L. hirtella.*
- Plants glabrous; capsules glabrous. 7. *L. alternifolia.*

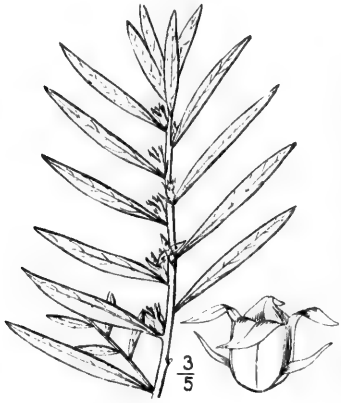
1. Ludwigia sphaerocàrpa Ell. Globe-fruited Ludwigia. (Fig. 2557.)

Ludwigia rudis Walt. Fl. Car. 89. 1788.?
Ludwigia sphaerocarpa Ell. Bot. S. C. 1: 213. 1817.

Erect, branching, generally finely pubescent, stoloniferous, 2°–3° high, the lower part of the stem clothed with aerenchyma when growing in water. Leaves alternate, sessile, those of the stem and branches lanceolate, acute at both ends, 2′–4′ long, scabrous and minutely denticulate, those of the stolons obovate; flowers solitary, sessile, greenish, about 1½″ broad; bractlets at base of calyx minute or none; calyx-lobes triangular-ovate, acute; petals commonly none; capsule subglobose, about 2″ high, scarcely longer than the calyx-lobes, finely pubescent.

In swamps, eastern Massachusetts and southern New York to Florida, west to Louisiana. July-Sept.

2. Ludwigia polycàrpa Short & Peter. Many-fruited Ludwigia. (Fig. 2558.)



Ludwigia polycarpa Short. & Peter, Transly. Journ. Med. 8: 581. 1835.

Erect, glabrous, branching, 1°–3° high, producing stolons from the base. Leaves alternate, sessile, narrowly lanceolate, acute at each end, 2′–4′ long, rough-margined, those of the stolons broader and spatulate; bractlets at base of the calyx linear, 1½″–2″ long, usually persistent; flowers sessile, about 1½″ broad, greenish; calyx-lobes triangular-lanceolate, acute, sometimes finely serrulate; petals minute, greenish; capsule glabrous, somewhat top-shaped but slightly 4-sided, about 2½″ high, often twice the length of the calyx-lobes, glabrous, at length dehiscent.

In swamps, Ontario to Massachusetts and Minnesota, south to Kentucky and Nebraska. July–Oct.

3. Ludwigia glandulòsa Walt. Cylindric-fruited Ludwigia. (Fig. 2559.)

Ludwigia glandulosa Walt. Fl. Car. 88. 1788.
Jussiaea brachycarpa Lam. Encycl. 3: 331. 1789.
Ludwigia cylindrica Ell. Bot. S. C. & Ga. 1: 213. 1817.

Erect, glabrous, much branched, 1°–3° high. Leaves alternate, sessile or narrowed into a short petiole, oblong-lanceolate, acute at each end, 2′–4′ long; flowers axillary, solitary, or rarely 2 together, greenish, about 1″ broad; bractlets at base of calyx minute or none; calyx-lobes triangular-ovate, acute; petals none; capsule cylindric, 4-grooved, 3″–4″ long, glabrous, 4–5 times as long as the calyx-lobes, at length dehiscent.

In swamps, southern Illinois and Missouri to Texas, east to Florida and South Carolina. July–Sept.

4. Ludwigia alàta Ell. Wing-stemmed Ludwigia. (Fig. 2560.)

Ludwigia alata Ell. Bot. S. C. & Ga. 1: 212. 1817.

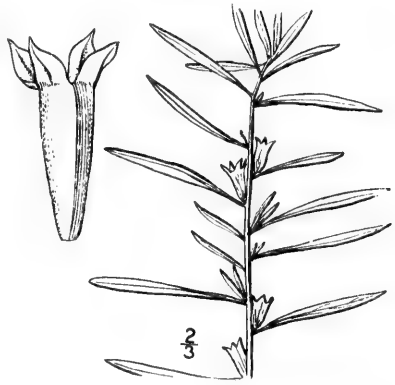
Perennial, slender, glabrous. Stems erect, 1°–3° tall, simple or branched, winged, often stoloniferous; leaves linear-oblanceolate to linear-lanceolate, or sometimes nearly linear, 1′–4′ long, acute or acutish, sessile or short-petioled, those of the stolons suborbicular or spatulate; flowers inconspicuous, about 2″ broad, white or greenish; spikes 2′–12′ long; calyx glabrous, its tube turbinate, its segments triangular-ovate, acute or acuminate; petals none; capsules broadly obpyramidal, 1½″–2″ high, sessile, the angles winged; seeds oval in outline, about ¼″ long, faintly pitted.

In marshes, North Carolina to Missouri, south to Florida and Louisiana. June–Sept.

5. Ludwigia lineàris Walt. Linear-leaved Ludwigia. (Fig. 2561.)

Ludwigia linearis Walt. Fl. Car. 89. 1788.

Erect, branching, glabrous, 1°–2½° high, often stoloniferous at the base and the lower part of the stem clothed with aerenchyma. Leaves alternate, those of the stem and branches narrowly linear, sessile, acute at each end, 1′–2′ long, about 1″ wide, the margins roughish, those of the stolons obovate; flowers axillary, solitary, sessile, about 2″ broad; bractlets at the base of the calyx minute or none; calyx-lobes triangular-ovate, acute, slightly shorter than the yellowish petals; capsule narrowly obpyramidal, 4-sided, narrowed at the base, 3″–4″ long, glabrous, 3–5 times as long as the calyx-lobes, several times longer than broad, at length dehiscent.



In swamps, pine-barrens of New York to Florida, west to Louisiana. July–Sept.

6. Ludwigia hirtélla Raf. Hairy Ludwigia. (Fig. 2562.)

Ludwigia hirtella Raf. Med. Rep. (II.) 5: 358. 1808.

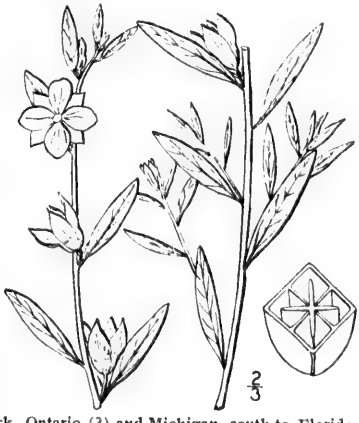
Erect, branching, hirsute-pubescent, 1°–2° high. Leaves alternate, oblong-lanceolate or ovate-lanceolate, sessile, obtuse at the apex, rounded at the base, 1′–1½′ long; pedicels 2-bracteolate; flowers axillary, solitary, peduncled, 6″–10″ broad; calyx-lobes ovate-lanceolate, acute, somewhat shorter than the yellow petals; capsules cubic with a rounded base, hirsute, about 2½″ high, shorter than the calyx-lobes, opening by an apical pore.

In swamps, pine-barrens of New Jersey to Florida, west to Texas. June–Sept.

7. Ludwigia alternifòlia L. Seed-box. Rattle-box. (Fig. 2563.)

Ludwigia alternifolia L. Sp. Pl. 118. 1753.

Erect, branching, glabrous or finely pubescent, 2°–3½° high. Leaves alternate, short-petioled, lanceolate, acute or acuminate at the apex, narrowed at the base, 2′–4½′ long; flowers axillary, short peduncled, solitary, 6″–8″ broad; peduncles 2-bracted above the middle; calyx-lobes ovate, acuminate, about equalling the yellow petals which fall away when the plant is shocked; capsules glabrous, cubic with a rounded base, slightly wing-angled, about 2½″ high, opening by a pore at the base of the style and finally loculicidally dehiscent.



In swamps, Massachusetts to northern New York, Ontario (?) and Michigan, south to Florida, Kansas and Texas. Roots often tuberous. June–Sept.

Ludwigia alternifòlia linearifòlia Britton, Bull. Torr. Club, 17: 315. 1890.

Leaves linear, elongated; calyx-lobes linear-lanceolate; petals more persistent. West Virginia.

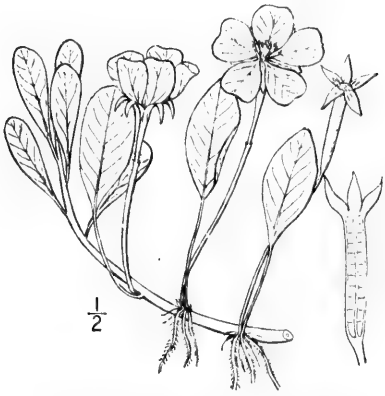
4. JUSSIAÈA L. Sp. Pl. 388. 1753.

Perennial herbs, with alternate, usually entire leaves, and white or yellow, axillary, solitary flowers. Peduncles mostly 2-bracted at the summit. Calyx-tube elongated, cylindric or prismatic, adnate to the ovary but not prolonged beyond it, the limb 4–6-lobed, the lobes acute, persistent. Petals 4–6 (rarely more), inserted under the margin of the disk. Stamens 8–12, in 2 rows, inserted with the petals; filaments short. Ovary 4–6-celled; stigma 4–6-lobed; ovules ∞. Capsule linear, oblong or club-shaped, angular or ribbed, septicidally dehiscent, crowned with the calyx-lobes. Seeds numerous. [In honor of Bernard de Jussieu, 1699–1777, founder of the Natural System of Botany.]

About 35 species, natives of warm and temperate regions, most abundant in America. Besides the following about 7 others occur in the southern States.

Creeping or floating; petals 5; pod cylindric. 1. *J. diffusa.*
Erect; petals 4; pod club-shaped, 4-sided. 2. *J. decurrens.*

1. Jussiaea diffùsa Forskl. Floating or Creeping Jussiaea or Primrose-Willow. (Fig. 2564.)



J. diffusa Forskl. Fl. AEgypt. Arab. 210. 1775.
Jussiaea repens Sw. Obs. 172. 1791. Not L.

Stem creeping or floating, freely rooting from the nodes, glabrous, 1°–3° long. Leaves oval, oval-lanceolate or obovate, slender-petioled, glabrous, veiny, obtuse or acute at the apex, narrowed at the base, entire, 1′–4′ long; peduncles slender; flowers yellow, 6″–12″ broad; calyx-lobes 5, lanceolate, acute, shorter than the 5 obovate usually emarginate petals; stamens 10; capsule cylindric, tapering at the base, ridged, glabrous, 1′–1½′ long, 1½″–2″ thick; seeds in 1 row in each cell.

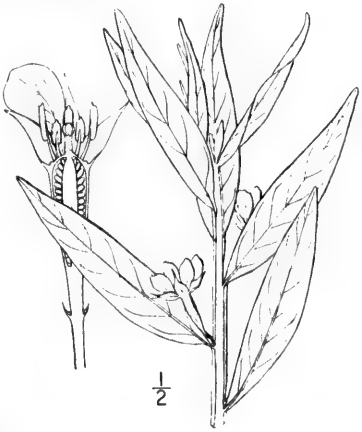
In ponds, Kentucky and Illinois to Kansas, Florida and Texas. Also in tropical America and Asia. June–Aug.

2. Jussiaea decúrrens (Walt.) DC. Upright Primrose-Willow. (Fig. 2565.)

Ludwigia decurrens Walt. Fl. Car. 89. 1788.
Jussiaea decurrens DC. Prodr. 3: 56. 1828.

Erect, stem angled, branching, glabrous, 1°–2° high. Leaves lanceolate, acute or acuminate at the apex, narrowed at the base and decurrent on the stem, entire, 1′–4′ long. flowers very short-peduncled, yellow, 4″–6″ broad; calyx lobes 4, ovate-lanceolate, acute, about equalling the 4 obovate petals; stamens 8; capsule club-shaped, 2–3 times as long as the peduncle, 4-sided, the angles somewhat winged; seeds in several rows in each cell.

In swamps, Maryland to Georgia and Florida, west to Illinois, Arkansas and Texas. July–Sept.



5. CHAMAENÈRION Adans. Fam. Pl. 2: 85. 1763.

Showy perennial herbs, with tufted stems which are often woody at the base. Leaves alternate, leathery, entire; flowers perfect, irregular, showy, white or purple, in terminal racemes; calyx-tube not prolonged beyond the ovary, narrow, the 4 calyx-segments deciduous; petals 4, entire, broadest above the middle, spreading; stamens 8, declined; filaments dilated at the base; anthers oblong; ovary 4-celled; united styles filiform; stigmas 4-cleft; ovules numerous, in 2 rows, ascending. Capsule 4-celled, obtusely 4-angled, elongated, opening loculicidally. Seeds numerous, with a tuft of hairs (coma) at the end. [Greek, ground rose-bay.]

About 4 species, chiefly in the north temperate zone.

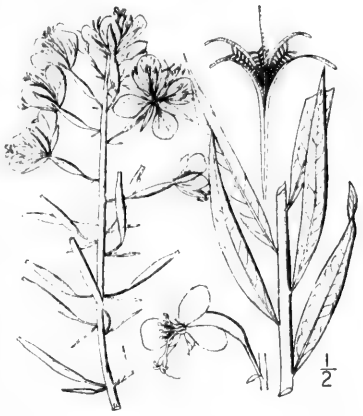
Bracts small; lateral nerves of the leaves confluent in marginal loops; style pubescent at the base. 1. *C. angustifolium.*
Bracts leaf-like; lateral nerves of the leaves obsolete; style glabrous. 2. *C. latifolium.*

1. Chamaenerion angustifòlium (L.) Scop. Great or Spiked Willow-herb. Fire-weed. (Fig. 2566.)

Epilobium angustifolium L. Sp. Pl. 347. 1753.
C. angustifolium Scop. Fl. Carn. Ed. 2, 1: 271. 1772.
Epilobium spicatum Lam. Fl. Fr. 3: 482. 1778.

Erect, rather stout, simple or branched, glabrous or often finely pubescent above, 2°–8° high. Leaves alternate, very short-petioled, lanceolate, entire or denticulate, 2′–6′ long, 4″–12″ wide, pale beneath, acute at the apex, narrowed at the base, thin, the lateral veins confluent in marginal loops; flowers 8″–15″ broad, purple, or sometimes white, in elongated terminal spike-like racemes; bracts mostly shorter than the pedicels; petals entire; style pubescent at the base; stigma 4-lobed; capsules 2′–3′ long, about 1½″ thick, finely canescent, at least when young; seeds about ½″ long, smooth, or nearly so, the coma long, whitish.

In dry soil, Labrador to Alaska, south to North Carolina, Kansas, in the Rocky Mountains to Arizona, and on the Pacific Coast to California. Also in Europe and Asia. Often appears in abundance after forest fires. June–Sept.



2. Chamaenerion latifòlium (L.) Sweet. Broad-leaved Willow-herb. (Fig. 2567.)

Epilobium latifolium L. Sp. Pl. 347. 1753.
Chamaenerion latifolium Sweet, Hort. Brit. Ed. 2, 198. 1830.

Erect, usually branching, glabrate below, often quite canescent above, 6′–18′ high. Leaves mostly sessile, 1′–2′ long, 2″–6″ wide, denticulate or entire, lanceolate or ovate-lanceolate, acutish at both ends, thick, those of the branches opposite, the veins inconspicuous; flowers purple, 1′–2′ broad, in mainly short leafy-bracted racemes; petals entire; styles glabrous; stigma 4-lobed; capsules ½′–1½′ long, about 1½″ thick, canescent; seeds about 1″ long, smooth or nearly so; coma elongated, whitish.

Moist ground, Newfoundland to Alaska, south to Quebec, Colorado and Oregon. Also in Europe and Asia. June–Aug.

6. EPILÒBIUM L. Sp. Pl. 347. 1753.

Herbs, or sometimes shrubby plants, with alternate or opposite leaves, and axillary or terminal, solitary, spicate or racemose flowers. Calyx-tube linear, produced beyond the ovary, the limb 4-parted, deciduous. Petals 4, mostly obovate or obcordate. Stamens 8; anthers oblong or linear, short. Ovary 4-celled; united styles slender or filiform; stigma club-shaped or 4-lobed; ovules numerous. Capsule narrow, elongated, 4-sided, 4-celled, loculicidally dehiscent by 4 valves. Seeds small, numerous, with a tuft of hairs (coma) at the summit. [Greek, upon a pod, flower and pod appearing together.]

About 65 species, of wide geographic distribution, most abundant in temperate regions. Besides the following, about 30 others occur in the western and northwestern parts of North America.

Stigma deeply 4-lobed; flowers large. — 1. *E. hirsutum.*
Stigma entire, or merely notched.
  Seeds smooth or nearly so; arctic or alpine species.
    Flowers white; leaves usually denticulate. — 2. *E. alpinum.*
    Flowers violet; leaves mostly entire. — 3. *E. anagallidifolium.*
  Seeds papillose.
    Leaves linear or lanceolate, entire or nearly so.
      Plants crisp-pubescent or canescent.
        Leaves sessile, mostly obtuse. — 4. *E. palustre.*
        Leaves petioled, very narrow, acute. — 5. *E. lineare.*

Plants glandular-pubescent throughout, or only above.
Densely glandular throughout; leaves sessile. 6. *E. strictum.*
Glandular-pubescent above; leaves petioled. 7. *E. paniculatum.*
Leaves lanceolate or ovate, serrate.
Leaves lanceolate, acute or acuminate.
Seeds obconic, beakless; coma reddish. 8. *E coloratum.*
Seeds ellipsoid, short-beaked; coma white. 9. *E. adenocaulon.*
Leaves ovate, thin, obtuse. 10. *E. Hornemanni.*

1. Epilobium hirsùtum L. Great Hairy Willow-herb. (Fig. 2568.)

Epilobium hirsutum L. Sp. Pl. 347. 1753.

Stout, branched, 2°–4° high, softly hirsute-pubescent, spreading by subterranean shoots. Leaves lanceolate or oblong-lanceolate, usually opposite, sessile and often clasping at the base, acute at the apex, sharply serrulate, 1′–3′ long, 4″–6″ wide, thin, pubescent on both sides; flowers axillary, erect, rose-purple, about 1′ broad; petals notched, pubescent at the base within; stigma deeply 4-lobed; capsules stalked, 2′–3′ long, about 1″ thick, pubescent; seeds about ½″ long, smooth; coma whitish.

In waste places, eastern New England, central Ne . York, Ontario, and in ballast about the sea-ports. Adventive from Europe. English names, Codlins-and-cream, Fiddle-grass. June–Sept.

2. Epilobium alpìnum L. Alpine Willow-herb. (Fig. 2569.)

Epilobium alpinum L. Sp. Pl. 348. 1753.
E. lactiflorum Haussk. OEst. Bot. Zeit. 29: 89. 1879.

Slender, weak, glabrous or nearly so, 3′–12′ high. Leaves thin, pale, petioled, opposite, or the upper alternate, denticulate or entire, obtuse or obtusish at the apex, narrowed at the base, 6″–10″ long, 2″–4″ wide; flowers few, axillary, nearly erect, white, 2″–3″ broad, petals notched; stigma nearly entire; capsules slender-stalked, 1′–2′ long, about ½″ thick, glabrous; seeds smooth, narrowed into a beak; coma whitish.

Labrador to British Columbia, south to the White Mountains of New Hampshire, Utah and Oregon. Also in Europe. Summer.

3. Epilobium anagallidifòlium Lam. Pimpernel Willow-herb. (Fig. 2570.)

Epilobium anagallidifolium Lam. Encycl. 2: 376. 1786.

Low, usually tufted, 2′–6′ high, resembling the preceding species but generally smaller. Stems commonly pubescent in lines and nodding at the apex; leaves oblong or narrowly ovate, entire or nearly so, obtuse at the apex, narrowed at the base into a short petiole, 5″–10″ long, 1½″–2½″ wide; flowers few, axillary, clustered at the apex, violet-purple, nodding, about 2½″ broad; stigma entire; capsules slender-peduncled, glabrous, about 1′ long, ½″ wide; seeds smooth, short-beaked, about ½″ long; coma dingy-white.

Labrador and through arctic America to Alaska, south in the Rocky Mountains to Nevada. Also in Europe and Asia. Summer.

4. Epilobium palústre L. Marsh or Swamp Willow-herb. (Fig. 2571.)

Epilobium palustre L. Sp. Pl. 348. 1753.
Epilobium oliganthum Michx. Fl. Bor. Am. 1: 223. 1803.

Erect, slender, usually simple, 6′–18′ high, perennial by subterranean shoots, canescent above with incurved hairs. Leaves mostly opposite, sessile, oblong, or lanceolate-oblong, obtuse or subtruncate at the apex, 1′–2′ long, 1″–2½″ wide, erect or ascending, distinctly veined; flowers few in the upper axils, pink or whitish, usually nodding at first, 2″–3″ broad; stigma entire or nearly so; fruiting peduncles slender; capsules 1′–2′ long, slightly more than ½″ thick, canescent; seeds about ½″ long, a little papillose, translucent, the apex scarcely narrowed; coma pale.

In bogs, New Brunswick to Alaska, south to the White Mountains, Ontario, Colorado and Washington. Also in Europe and Asia. Summer.

5. Epilobium lineàre Muhl. Linear-leaved Willow-herb. (Fig. 2572.)

Epilobium lineare Muhl. Cat. 39. 1813.
Epilobium palustre var. *lineare* A. Gray, Man. Ed. 2, 130. 1856.

Slender, erect, canescent throughout with incurved hairs, 1°–2° high, at length much branched, perennial by subterranean shoots. Leaves linear or linear-lanceolate, mostly short-petioled, opposite or alternate, erect or ascending, acute at both ends, entire or very nearly so, 1′–2′ long, ½″–2″ wide, the veins obscure; flowers few or numerous in the upper axils, erect, pink or whitish, 2″–4″ broad; stigma entire or slightly notched; pedicels mostly slender; capsules about 2′ long, finely canescent; seeds less than 1″ long, slightly papillose, the coma dingy.

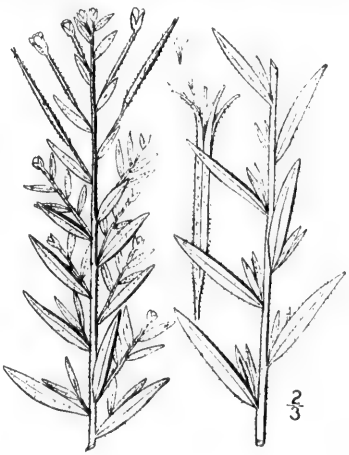
In swamps, New Brunswick to Delaware, west to British Columbia, the Indian Territory and Wyoming. July–Sept. Sometimes produces bulblets near the base of the stem.

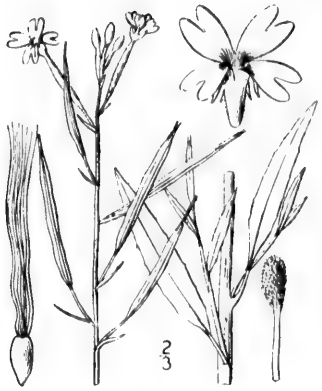
6. Epilobium stríctum Muhl. Downy or Soft Willow-herb. (Fig. 2573.)

Epilobium strictum Muhl. Cat. 39. 1813.
Epilobium molle Torr. Fl. U. S. 1: 393. 1824. Not Lam. 1805.

Erect, usually much branched, 1°–3° high, densely pubescent with whitish somewhat spreading hairs, perennial by subterranean shoots. Leaves sessile, ascending, broader than those of the preceding species, short-lanceolate, obtuse or obtusish, 9″–20″ long, 2″–4″ wide, alternate or opposite, mostly entire, evidently veined; flowers in the upper axils, pink or whitish, about 2″ broad; stigma entire or nearly so; capsules 2″–3″ long, nearly 1″ thick, short-peduncled, canescent; seeds obconic, papillose; coma dingy.

Bogs, Maine to western Ontario and Minnesota, south to Virginia and Illinois. July–Sept.





7. Epilobium paniculàtum Nutt. Panicled Willow-herb. (Fig. 2574.)

Epilobium paniculatum Nutt.; T. & G. Fl. N. A. 1: 490. 1840.

Annual, slender, 1°–2° tall, loosely branched, glabrous below, glandular-pubescent above. Leaves alternate, varying from linear to linear-lanceolate, 1′–3′ long, acute, denticulate or nearly entire, attenuate into slender winged petioles, often involutely folded; pedicels subtended by narrow bracts or bearing these some distance from their bases; calyx often purple, its tube funnelform, 1″–1½″ long, shorter than the lanceolate segments; petals cuneate, notched, 3″–4″ long, violet; capsules ascending, linear-fusiform, 10″–15″ long, curved; seeds obovoid, 1″ long, black, slightly papillose.

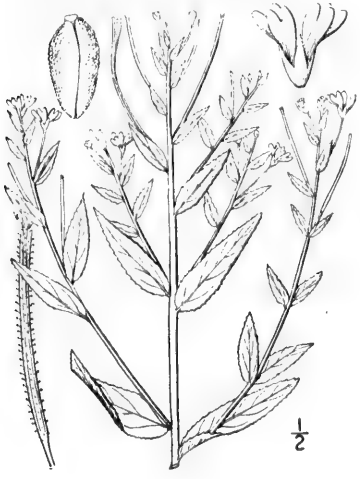
Lake Huron to British Columbia, Colorado, Arizona and California. Summer.

8. Epilobium coloràtum Muhl. Purple-leaved Willow-herb. (Fig. 2575.)

Epilobium coloratum Muhl.; Willd. Enum. 1: 411. 1809.

Erect, much branched, bushy, 1°–3° high, more or less canescent above, with incurved hairs often arranged in lines, glabrate below. Stem and leaves often purplish; leaves generally slender-petioled but sometimes sessile, lanceolate, acute or acuminate at the apex, narrowed at the base, sharply serrulate or denticulate, 2′–6′ long, 3″–8″ wide; flowers numerous in the axils, pink or white, 2″–3″ broad, generally nodding; stigma entire or merely notched; capsules short-peduncled, finely pubescent, 1′–2′ long, about 1″ thick; seeds obconic-fusiform, beakless, papillose, less than 1″ long; coma reddish-brown.

In low grounds, Maine to Ontario, Wisconsin, Nebraska, South Carolina, and Missouri. Ascends to 2000 ft. in Virginia. July–Sept.



9. Epilobium adenocàulon Haussk. Northern Willow-herb. (Fig. 2576.)

Epilobium glandulosum Lehm. in Hook. Fl. Bor. Am. 1: 206. 1833?

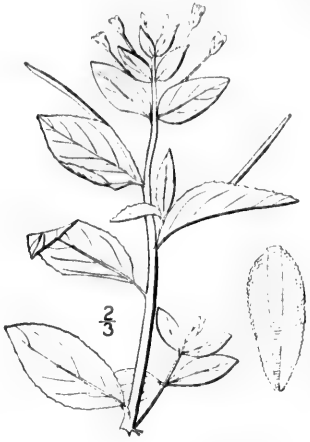
Epilobium adenocaulon Haussk. OEst. Bot. Zeit. 29: 119. 1879.

Closely resembling the preceding species, but the inflorescence and capsules glandular-pubescent. Leaves lanceolate or ovate-lanceolate, obtusish or sometimes acute, sparingly serrulate or denticulate, seldom over 2½′ long; flowers usually nodding at first; seeds obovoid, abruptly short-beaked, about ½″ long, papillose; coma white.

In moist grounds, New Brunswick to Oregon, south to Massachusetts, Pennsylvania, Iowa, Utah and California. Ascends to 4000 ft. in the Adirondacks. July–Sept.

10. Epilobium Hornemánni Reichenb. Hornemann's Willow-herb.

(Fig. 2577.)



Epilobium Hornemanni Reichenb. Icon. Crit. 2: 73. 1824.

Epilobium alpinum var. *majus* A. Gray, Man. Ed. 5, 177. 1867.

Erect, 6′–12′ high, simple or nearly so, slightly pubescent above, otherwise glabrous. Leaves short-petioled, ovate or elliptic, mostly broadly obtuse at the apex, narrowed or rounded at the base, entire or rather remotely denticulate, thin, 6″–15″ long, 4″–10″ wide; flowers few in the upper axils, purple or violet, 3″–3½″ broad; stigma entire; capsules 1′–2½′ long, nearly glabrous, slender-pedicelled; seeds about ½″ long, papillose, nearly beakless; coma dingy-white.

Moist places, White Mountains to Labrador, west to Wisconsin and British Columbia, south in the Rocky Mountains to Colorado and to California. Also in Europe. Summer.

7. ÓNAGRA Adans. Fam. Pl. 2: 85. 1763.

Annual or biennial caulescent herbs, with mostly erect stems. Leaves alternate, undulate or toothed, sessile or short-petioled; buds erect. Flowers yellow, nocturnal, in terminal spikes. Calyx-tube elongated, terete, gradually enlarged at the throat; calyx-segments narrow, the tips free in the bud. Petals 4, spreading. Stamens 8, equal in length; filaments filiform; anthers linear. Ovary 4-celled; united styles filiform; stigma 4-cleft; ovules numerous, in 2 or more rows, horizontal. Capsule 4-celled, 4-angled, more or less tapering, opening loculicidally. Seeds prismatic-angled, in 2 or more rows, horizontal. [Greek, the wild ass, said to refer to the similarity of its leaves to the ears of that animal.]

About 12 species, chiefly North American.

Flowers small; petals 1″–2″ broad.	1. *O. cruciata.*
Flowers large; petals ½′–2′ broad.	
Capsules ¾′–1′ long, abruptly narrowed at the apex.	2. *O. biennis.*
Capsules 1¼′–1½′ long, gradually narrowed from near the base.	3. *O. Oakesiana.*

1. Onagra cruciàta (Nutt.) Small. Small-flowered Evening-Primrose.

(Fig. 2578.)

OEnothera cruciata Nutt.; Ser. in DC. Prodr. 3: 47, as synonym. 1828.

OEnothera biennis var. *cruciata* T. & G. Fl. N. A. 1: 492. 1840.

Onagra biennis cruciata Britton, Mem. Torr. Club, 5: 233. 1894.

Onagra cruciata Small, Bull. Torr. Club, 23: 169. 1896.

Annual, glabrous or sparingly villous. Stem erect, 2°–4° tall, usually simple, purple; leaves narrowly oblong or oblanceolate (the upper ones often lanceolate), 1½′–4′ long, acute, serrate-denticulate, the lower ones slender-petioled, the uppermost nearly sessile; flowers small, yellow, nocturnal; spikes 4′–12′ long, leafy-bracted; calyx-tube slender, ¾′–1′ long, sparingly villous; calyx-segments linear-lanceolate, shorter than the tube; petals linear, ½′ long, 1″–2″ broad, acutish; capsules 1′–1¼′ long, gradually narrowed from the base, villous; seeds prismatic-angled, 1″ long.

Vermont to New York and Massachusetts. Ascends to 2000 feet in the Adirondacks. Aug.–Oct.

2. Onagra biénnis (L.) Scop. Common Evening-Primrose. Night Willow-herb. (Fig. 2579.)

OEnothera biennis L. Sp. Pl. 346. 1753.
OE. muricata L. Syst. Ed. 12, 263. 1767.

Erect, generally stout, annual or biennial, simple and wand-like or branched, 1°–9° high, more or less hirsute-pubescent, rarely glabrate. Leaves lanceolate, acute or acuminate, narrowed and sessile at the base or the lowest petioled, repand-denticulate, 1′–6′ long; flowers spicate, terminal, leafy-bracted, bright yellow, opening in the evening, 1′–2′ broad; calyx-tube slender, much longer than the ovary, the lobes linear, contiguous at the base, reflexed; capsules oblong, narrowed above, erect, pubescent, ¾′–1′ long, 2½″–3″ thick, nearly terete; seeds angled.

Usually in dry soil, Labrador to Florida, west to the Rocky Mountains. Naturalized in the Old World. June–Oct.

Onagra biénnis grandiflòra (Ait.) Lindl.; Small, Bull. Torr. Club, 23: 171. 1896.
OEnothera grandiflora Ait. Hort. Kew, 2: 2. 1789.

Stouter. Leaves larger, thicker and broader; flowers 2′–4′ broad. Range nearly that of the species, more common southward.

3. Onagra Oakesiàna (A. Gray) Britton. Oakes' Evening-Primrose. (Fig. 2580.)

OEnothera biennis var. *Oakesiana* A. Gray, Man. Ed. 5, 178. 1867.
Onagra Oakesiana Britton, Mem. Torr. Club, 5: 233. 1894.

Resembling the preceding species, usually annual, dull green, pubescent with appressed velvety hairs. Stem 1°–4° tall, mostly simple; leaves narrow, the basal narrowly oblanceolate, 3′–10′ long, the cauline lanceolate or linear-lanceolate, all acute, distantly dentate, sessile or short-petioled; flowers yellow, nocturnal, 1′–1½′ broad; spikes 4′–20′ long; calyx villous, its tube about 1′ long, its segments linear-lanceolate, one-half as long as the tube; petals obovate, ½′–¾′ long; capsule linear-pyramidal, gradually narrowed to the summit, 1¼′–1½′ long, 4-sided, curved; seeds prismatic, about 1″ long, the faces reticulated.

Shores of the St. Lawrence and along the Great Lakes, south to southern New York and Nebraska. Summer.

8. OENOTHÈRA L. Sp. Pl. 346. 1753.

Usually low annual biennial or perennial caulescent herbs, with prostrate or erect stems. Leaves alternate, sinuate or pinnatifid. Flowers perfect, yellow, axillary, or sometimes in terminal spikes, nocturnal; buds erect. Calyx-tube elongated, sometimes filiform, terete; calyx-segments 4, finally reflexed, deciduous. Petals 4, spreading. Stamens 8, equal in length; filaments filiform; anthers linear. Ovary 4-celled, elongated; united styles filiform; stigma deeply 4-cleft; ovules numerous, in 2 rows, ascending. Capsules usually narrowly cylindric, sometimes slightly tapering, spreading or ascending, obtusely 4-angled, loculicidal. Seeds numerous, in 2 rows, terete, crowned by a tubercle. [Greek, wine-scenting, the roots being once used for that purpose.]

About 20 species, in North America and western South America.

Flowers axillary.
Silvery-pubescent with appressed or ascending hairs; seeds striate. 1. *O. humifusa.*
Glabrous or sparingly hirsute-pubescent; seeds pitted. 2. *O. laciniata.*
Flowers in terminal bracted spikes. 3. *O. rhombipetala.*

1. OEnothera humifùsa Nutt. Seaside Evening-Primrose. (Fig. 2581.)

OEnothera humifusa Nutt. Gen. 1: 245. 1818.
OEnothera sinuata var. *humifusa* T. & G. Fl. N. A. 1: 494. 1840.

Spreading and decumbent or ascending, branched from the base and usually also above, silvery-pubescent with white appressed or ascending hairs; stems 8′–18′ long. Leaves sessile or narrowed into a petiole, acutish or sometimes obtuse at the apex, ½′–2′ long, repand-denticulate, the lower pinnatifid; flowers axillary, yellow, nocturnal, 6″–10″ broad; calyx-lobes linear, obtusish, shorter than the tube, somewhat spreading; capsule linear, 6″–12″ long, about 1½″ thick, very pubescent; seeds striate longitudinally.

On sea-beaches, New Jersey to Florida. June–Sept.

2. OEnothera laciniàta Hill. Sinuate-leaved Evening-Primrose. (Fig. 2582.)

OEnothera laciniata Hill. Veg. Syst. 12: 64. 1767.
OEnothera sinuata L. Mant. 2: 228. 1771.
OEnothera minima Pursh, Fl. Am. Sept. 262. *pl. 15.* 1814.

Decumbent or ascending, simple or sometimes branched, 4′–18′ high, glabrous or sparingly hirsute-pubescent. Leaves sessile or the lower petioled, oval-lanceolate or oblanceolate, acute or obtusish at the apex, sinuate-dentate or often pinnatifid, 1′–2′ long; flowers axillary (or on small plants sometimes solitary and terminal), 6″–18″ broad; calyx-lobes linear-lanceolate, reflexed, much shorter than the slender tube; capsule linear, 1′–1½′ long, about 1″ thick, more or less pubescent, straight or curved upward; seeds strongly pitted.

In sandy dry soil, southern New Jersey to Pennsylvania, Illinois and Kansas, south to Florida, Texas and Mexico, extending into South America. May–June. Naturalized in Vermont.

OEnothera laciniàta grándis Britton.

OE. sinuata var. *grandiflora* S. Wats. Proc. Am. Acad. 8: 581. 1873. Not *OE. grandiflora* Ait. 1789.
OEnothera sinuata grandis Britton, Mem. Torr. Club, 5; 358. 1894.

Similar to the species, but the leaves more prominently toothed and the flowers 2′–2½′ broad. Missouri and Kansas, south to Texas.

3. OEnothera rhombipétala Nutt. Rhombic Evening-Primrose. (Fig. 2583.)

OEnothera rhombipetala Nutt.; T. & G. Fl. N. A. 1: 493. 1840.

Erect, simple or rarely branched, finely and densely appressed pubescent, 2°–4° high. Leaves linear-lanceolate, sessile and rounded at the base or the lower narrowed into petioles, acuminate at the apex, remotely denticulate, 2′–4′ long; flowers spicate, terminal, leafy-bracted, yellow, nocturnal, 1′–2′ broad; calyx-lobes linear, reflexed, canescent, shorter than the very slender tube; petals rhombic-obovate; capsule columnar, curved upward, pubescent, 6″–8″ long, about 1″ thick; seeds obovoid, tuberculate at the top.

On prairies, Minnesota to Indiana, Nebraska and the Indian Territory. June–July.

9. ÁNOGRA Spach, Ann. Sci. Nat. (II.) 4: 164. 1835.

Low annual or perennial caulescent herbs. Stems often clothed with a papery bark. Leaves alternate, entire or usually pinnatifid. Buds drooping; flowers perfect, white or pink, usually axillary, diurnal. Calyx-tube elongated, gradually enlarged upward; calyx-segments narrow, finally reflexed, the tips free or united in the bud. Stamens 8, equal in length; filaments filiform; anthers linear. Ovary elongated, 4-celled; united styles filiform; stigma deeply 4-cleft; ovules numerous, in 1 row, ascending. Capsules elongated, spreading or ascending, 4-angled, loculicidal. Seeds ascending, in 1 row, terete. [Anagram of *Onagra*.]

About 10 species, chiefly in southern North America.

Tips of the calyx-segments not free in the bud. 1. *A. albicaulis.*
Tips of the calyx-segments free in the bud.
  Throat of the calyx-tube villous within. 2. *A. coronopifolia.*
  Throat of the calyx-tube glabrous within. 3. *A. pallida.*

1. Anogra albicàulis (Pursh) Britton. Prairie Evening-Primrose. (Fig. 2584.)

OEnothera alb'caulis Pursh, Fl. Am. Sept. 733. 1814. Not Nutt. 1818.

OEnothera pinnatifida Nutt. Gen. 1: 245. 1818.

Anogra albicaulis Britton, Mem. Torr. Club, 5: 234. 1894.

Diffusely branched at the base; branches decumbent or ascending, more or less hirsutely pubescent or puberulent, whitish and often shreddy, 4′–12′ long. Basal and lower leaves petioled, the upper sessile, oblanceolate or lanceolate in outline, deeply pinnatifid or the lowest repand-dentate (rarely entire), 1′–4′ long; flowers axillary, diurnal, 1½′–3′ broad, white, becoming rose-color; petals obcordate or emarginate; calyx-segments lanceolate, not free in the bud, acuminate, hirsute, finally reflexed, the throat naked; capsule linear, 1′–1½′ long, about 1″ thick, hirsute or puberulent; seeds finely pitted.

Prairies, Nebraska and Dakota to New Mexico and Sonora. April–June.

2. Anogra coronopifòlia (T. & G.) Britton. Cut-leaved Evening-Primrose. (Fig. 2585.)

OEnothera coronopifolia T. & G. Fl. N. A. 1: 495. 1840.

Anogra coronopifolia Britton, Mem. Torr. Club, 5: 234. 1894.

Erect, branched, 6′–2° high, more or less hispid, pubescent or canescent. Leaves lanceolate or oblanceolate in outline, sessile or the lowest petioled, 6″–2′ long, usually finely and deeply pinnatifid into linear-oblong lobes; flowers axillary, white, turning pink, 9″–15″ broad; calyx-segments linear, the tips free in the bud, reflexed, the throat villous within; petals broadly obovate; capsule oblong, abruptly constricted at the top, straight, pubescent and sometimes tuberculate, 4″–10″ long, about 2″ thick; seeds tuberculate.

Prairies, Nebraska and Colorado to Utah, south to Kansas and New Mexico. June–Sept.

3. Anogra pállida (Lindl.) Britton. White-stemmed Evening-Primrose. (Fig. 2586.)

OE. albicaulis Nutt. Fras. Cat. Name only. 1813.
OE. pallida Lindl. Bot. Reg. **14**: *pl. 1142*. 1828.
Anogra pallida Britton, Mem. Torr. Club, **5**: 234. 1894.

Erect, simple or branched, 6′–4° high, stems white or pale, glabrous or puberulent, rarely with a few scattered long hairs, the bark often shreddy. Leaves linear or oblong linear, sessile or the lowest petioled, finely appressed-pubescent or glabrate, entire, repand or somewhat pinnatifid, 1′–3½′ long; flowers axillary, white, turning pink, 1′–1½′ broad; segments of the calyx linear, the tips free in the bud, its throat glabrous within; petals nearly orbicular, entire or emarginate; capsule linear, curved, 1′–2′ long, about 1½″ thick; seeds smooth.

Prairies, Minnesota to British Columbia, Nebraska, Mexico and California. May–Aug.

10. KNEÌFFIA Spach, Hist. Veg. **4**: 373. 1835.

Usually slender annual or perennial caulescent shrubby herbs. Leaves thinnish, mostly narrow, entire or shallowly toothed; buds erect. Flowers perfect, yellow, diurnal, in terminal spikes or racemes. Calyx-tube slender, dilated at the throat; calyx-segments finally reflexed, the tips united in the bud or nearly so. Petals 4, spreading. Stamens 8, the alternate ones longer; filaments filiform; anthers linear. Ovary usually club-shaped, 4-angled; united styles filiform; stigma 4-cleft; ovules numerous, on slender stalks, in many rows. Capsules more or less club-shaped, nearly sessile or long-stalked, 4-winged or rarely sharply 4-angled. Seeds numerous, not angled, without a tubercle. [In honor of Prof. C. Kneiff, of Strassburg, who wrote on cryptogamic botany.]

About 10 species, mostly in temperate North America.

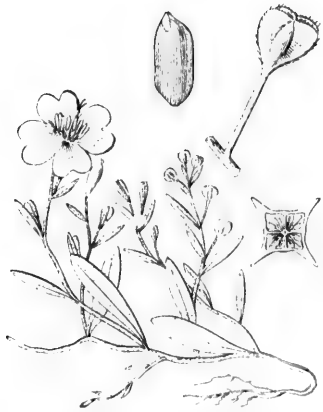
Stem-leaves filiform-linear; capsules 4-angled or very slightly 4-winged. 1. *K. linifolia.*
Stem-leaves never approaching filiform; capsules prominently winged.
  Capsules club-shaped.
    Pedicels and capsules pubescent.
      Stems decumbent, spreading; body of the capsule becoming subglobose. 2. *K. Alleni.*
      Stems erect or nearly so; body of the capsule more or less elongated.
        Pedicel longer than the body of the capsule, the wings thick and pubescent. 3. *K. longipedicellata.*
        Pedicel shorter than the body of the capsule, the wings thin and glabrous. 4. *K. linearis.*
    Pedicels and capsules glabrous or glabrate. 5. *K. pumila.*
  Capsules oblong or nearly so.
    Plants not glaucous, usually pubescent; capsules less than 4″ long. 6. *K. fruticosa.*
    Plants somewhat glaucous, glabrous; capsules more than 5″ long. 7. *K. glauca.*

1. Kneiffia linifòlia (Nutt.) Spach. Thread-leaved Sundrops. (Fig. 2587.)

OEnothera linifolia Nutt. Journ. Acad. Phila. **2**: 120. 1821.
Kneiffia linifolia Spach, Nouv. Ann. Mus. Par. **4**: 368. 1835.

Erect, very slender, simple or branched, 6′–18′ high, glabrous or nearly so below, finely pubescent above. Stem-leaves filiform-linear, entire, crowded, 6″–15″ long; basal leaves tufted, oblanceolate or spatulate, petioled, about 1′ long; flowers in loose spike-like racemes, yellow, diurnal, 3″–4″ broad; calyx-lobes short, reflexed, the tube rather shorter than the ovary; stigma-lobes very short; capsule obovoid, sessile or very nearly so, puberulent, sharply 4-sided but not winged, 2″–3″ long.

In dry soil, Illinois to Kansas, south to Georgia, Louisiana and Texas. May–July.



2. Kneiffia Álleni (Britton) Small. Allen's Sundrops. (Fig. 2588.)

OEnothera fruticosa var. *humifusa* Allen, Bull. Torr. Club, **1**: 3. 1870. Not *OE. humifusa* Nutt. 1818.
Kneiffia linearis Alleni Britton, Mem. Torr. Club, **5**: 235. 1894.
Kneiffia Alleni Small, Bull. Torr. Club, **23**: 177. 1896.

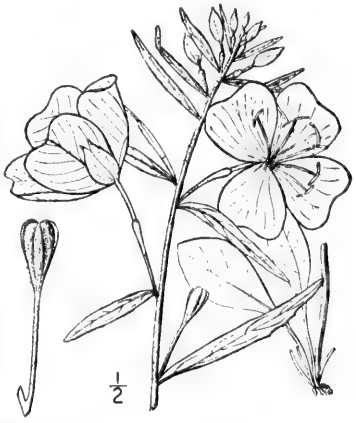
Low, perennial, finely appressed-pubescent; stems decumbent, at length diffusely branched, 3′–2° long, wiry and zigzag. Leaves oblanceolate to lanceolate, ½′–1¼′ long, usually obtuse, undulate, sessile or short-petioled; flowers yellow, about ¾′–1′ broad; racemes 1′–2′ long, usually interrupted; calyx villous, its tube 2″–3″ long, striate, its segments linear-oblong, as long as the tube; petals orbicular-obovoid, notched at the apex; capsules club-shaped, 3″–4″ long, the body subglobose, winged, shorter than the pedicels; seeds obovoid, to oblong, ½″ long, minutely pitted in rows.

In sand, eastern Long Island. June–Aug.

3. Kneiffia longipedicellàta Small. Long-stemmed Sundrops. (Fig. 2589.)

Kneiffia longipedicellata Small, Bull. Torr. Club, **23**: 178. 1896.

Annual, slender, more or less puberulent; stems erect or assurgent, 1°–2½° tall, red, simple or sparingly branched above. Basal leaves spatulate or obovate-spatulate, 1½′–3′ long; stem-leaves few, linear-lanceolate, 1′–2½′ long, obtuse or acutish, entire, sometimes undulate, short-petioled; flowers yellow, 1′–2′ broad; racemes 1′–4′ long; calyx hirsute, its tube slender, 5″–7″ long, its segments nearly linear, longer than the tube, the tips free in the bud; petals obovate, emarginate; capsules narrowly obovoid, the bodies about 5″ long, their angles with stout pubescent wings, their faces strongly ridged, the pubescent pedicel longer than the body; seeds irregular, less than ½″ long, minutely papillose.



New York to West Virginia and Florida. May–Aug.

4. Kneiffia lineàris (Michx.) Spach. Narrow-leaved Sundrops. (Fig. 2590.)

OEnothera linearis Michx. Fl. Bor. Am. **1**: 225. 1803.
Kneiffia linearis Spach, Hist. Veg. **4**: 376. 1835.

Biennial or perennial, slender, pilose or nearly glabrous. Stems erect or ascending, 6′–20′ tall, simple or much-branched above, finally angled; basal leaves spatulate or broadly oblanceolate, 2′–3′ long, entire or nearly so; cauline leaves linear, or linear-lanceolate, 1′–3′ long, slightly toothed, acute or obtuse, short-petioled; flowers yellow, ¾′–1¾′ broad; racemes 1′–4′ long; calyx slightly pubescent, its tube 4″–6″ long, its segments linear-lanceolate, longer than the tube; petals obovate, shallowly notched at the apex and eroded; capsule oblong-club-shaped, 4″–7″ long, the angles with papery glabrous wings, its faces ridged, narrowed into pedicels which are much shorter than the bodies; seeds irregular, ½″ long, angled.

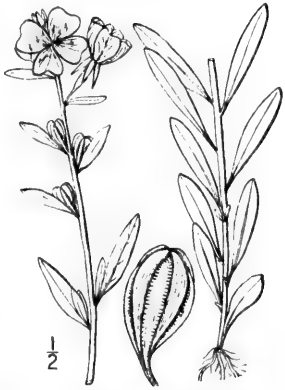
Connecticut to Tennessee and Georgia. June–Sept.

5. Kneiffia pùmila (L.) Spach. Small Sundrops. (Fig. 2591.)

OEnothera pumila L. Sp. Pl. Ed. 2, 493. 1762.
OEnothera chrysantha Michx. Fl. Bor. Am. 1: 225. 1803.
Kneiffia pumila Spach, Hist. Veg. 4: 377. 1835.

Erect, branched or simple, finely puberulent, 8′–2° high. Leaves oblanceolate or oblong, obtuse or obtusish at the apex, narrowed at the base and often petioled, entire or very nearly so, 1′–2′ long, 2″–4″ wide, usually glabrous; the basal ones broader and shorter; flowers in terminal, leafy-bracted spikes, yellow, diurnal, 4″–12″ broad; calyx-tube shorter than the ovary, the lobes linear-lanceolate, reflexed; petals obcordate; capsule sessile or short-stalked, glabrous, club-shaped, 3″–6″ long, the body obovoid, somewhat wing-angled.

In dry soil, Nova Scotia to Manitoba, south to New Jersey, Georgia and Kansas. Ascends to 2200 ft. in Virginia. June–Aug.



6. Kneiffia fruticòsa (L.) Raimann. Common Sundrops. (Fig. 2592.)

OEnothera fruticosa L. Sp. Pl. 346. 1753.
Kneiffia fruticosa Raimann, in Engl. & Prantl, Nat. Pfl. Fam. 3: Abt. 7, 214. 1893.

Erect, usually branched, 1°–3° high, pubescent with short hairs, rarely glabrous. Leaves lanceolate, ovate-lanceolate or oval-lanceolate, acute or obtusish at the apex, narrowed and sessile at the base or the lowest petioled, repand-denticulate, or rarely nearly entire, 1′–4′ long; flowers yellow, diurnal, 1′–2′ broad, in terminal, leafy-bracted spikes; calyx-segments lanceolate, spreading, the tube mostly longer than the ovary; petals obcordate; capsule sessile or short-stalked, oblong, prominently winged, glabrous or pubescent, 3″–4″ long.

In dry soil, Nova Scotia, New England to Georgia, west to Minnesota and Louisiana. June–Aug.

Kneiffia fruticòsa pilosélla (Raf.) Britton, Mem. Torr. Club, 5: 234. 1894.

OEnothera pilosella Raf. Ann. Nat. 15. 1820.

Pubescent with long spreading hairs throughout. New York to Illinois, south to Georgia. Ascends to 4200 ft. in North Carolina.

7. Kneiffia glàuca (Michx.) Spach. Glaucous Sundrops. (Fig. 2593.)

OEnothera glauca Michx. Fl. Bor. Am. 1: 224. 1803.
Kneiffia glauca Spach, Hist. Veg. 4: 374. 1835.

Erect, glabrous and glaucous, 1½°–3° high. Leaves sessile or the lower petioled, ovate or oval, repand-denticulate, 2′–5′ long, 5″–15″ wide, acute or acutish at the apex, narrowed or rounded at the base; flowers bright yellow, diurnal, 1½′–3′ broad, very showy in short, leafy corymbs; petals broadly obovate, emarginate; calyx-lobes ovate-lanceolate, acuminate, spreading, its tube very slender and 5–8 times as long as the ovary; capsule oblong, broadly 4-winged, glabrous, 5″–6″ long, borne on a short stalk.

In dry woods, mountains of Virginia to Georgia and Alabama. Also, according to B. B. Smyth, in Kansas. May-Sept.

11. HARTMÁNNIA Spach, Hist. Veg. 4: 370. 1835.

Annual or perennial caulescent herbs with branched stems. Leaves alternate, commonly pinnatifid or lyrate; buds drooping. Flowers perfect, white, red or purple, diurnal, in terminal spikes or racemes. Calyx-tube funnelform; calyx-segments narrow, deciduous, their tips mostly free in the bud. Petals 4, spreading. Stamens 8, the alternate ones longer; filaments filiform; anthers linear. Ovary elongated, 4-celled; stigma 4-cleft; ovules numerous on slender stalks, in many rows. Capsules club-shaped, 4-winged, sessile or stalked. Seeds numerous, not tuberculate. [In honor of Emanuel Hartmann, a resident of Louisiana.]

About 10 species, in North and South America.

1. Hartmannia speciòsa (Nutt.) Small. Showy Primrose. (Fig. 2594.)

OE. speciosa Nutt. Journ. Acad. Phil. 2: 119. 1821.
Hartmannia speciosa Small, Bull. Torr. Club, 23: 181. 1896.

Erect, ascending or decumbent, more or less branched, 6′–3° high, puberulent or finely pubescent. Stem-leaves lanceolate or linear-lanceolate, sessile, or short-petioled, acutish, sinuate or pinnatifid, 2′–3′ long; basal leaves slender-petioled, oval or oval-lanceolate, repand or pinnatifid at the base; flowers white or pink, 1½′–3½′ broad, generally few, loosely spicate; petals broadly obovate, emarginate; calyx-lobes ovate-lanceolate, acuminate, spreading, the tube rather longer than the ovary; capsule club-shaped, strongly 4-ribbed, 4-winged, pubescent, 6″–9″ long, on a short stout pedicel.

Prairies, Missouri and Kansas to Louisiana, Texas, Arizona and northern Mexico. May–July. Extensively naturalized in South Carolina and Georgia.

12. PACHŸLOPHUS Spach, Hist. Veg. 4: 365. 1835.

Perennial acaulescent or nearly acaulescent herbs. Leaves basal, leathery, pinnatifid or pinnately-toothed, petioled. Flowers basal, more or less tufted. Calyx pubescent, its tube linear-funnelform, its segments narrow, 2–3 times shorter than the tube. Petals white or pink, spreading. Stamens 8; filaments filiform, the alternate ones longer; anthers linear. United styles filiform; stigma 4-cleft. Capsules basal, woody, pyramidal, its angles retuse or obtuse, transversely wrinkled. Seeds sessile, in 1 or 2 rows, deeply furrowed along the raphe. [Greek, referring to the tuberculate edges of the valves of the capsule.]

A monotypic genus of western North America.

1. Pachylophus caespitòsa (Nutt.) Raimann. Scapose Primrose. (Fig. 2595.)

OEnothera caespitosa Nutt. Fras. Cat. 1813.
OEnothera scapigera Pursh, Fl. Am. Sept. 263. 1814.
Pachylophus caespitosa Raimann in Engl. & Prantl, Nat. Pfl. Fam. 3: Abt. 7, 215. 1893.

Acaulescent or nearly so, perennial or biennial from a thick woody root. Leaves clustered at the base, narrowed into a slender petiole, lanceolate, oblanceolate or oval, acutish at the apex, densely pubescent, sinuate-dentate, often densely ciliate with white hairs, repand or pinnatifid, 3′–8′ long, usually less than 1′ wide; flowers few, white or rose, 1½′–3′ broad; petals obcordate; lobes of the calyx pubescent, narrowly lanceolate, reflexed-spreading, its tube 2′–7′ long, dilated at the mouth, many times longer than the ovary; capsule sessile, ovoid, strongly tuberculate on each side, the angles ribbed; seeds densely and minutely tuberculate.

Nebraska and Montana to the Northwest Territory, south to Nevada, New Mexico and Sonora. June–July.

13. LAVAÙXIA Spach, Hist. Veg. 4: 366. 1835.

Low perennial usually acaulescent herbs, rarely producing short stems. Leaves mostly basal, pinnatifid, numerous. Flowers perfect, white, pink or pale yellow. Calyx-tube slender, dilated at the throat; calyx-segments finally reflexed, the tips free in the bud or united. Petals 4, spreading. Stamens 8, the alternate ones longer; filaments filiform; anthers linear. Ovary short, 4-angled; stigma 4-cleft; ovules few. Capsules stout, their angles sometimes winged above. Seeds few. [In honor of Francois Delavaux, founder of the botanical garden at Nismes.]

About 6 species, chiefly in southern North America.

Leaves membranous; capsules beaked, glabrate. 1. *L. triloba.*
Leaves leathery; capsules hardly beaked, pubescent. 2. *L. brachycarpa.*

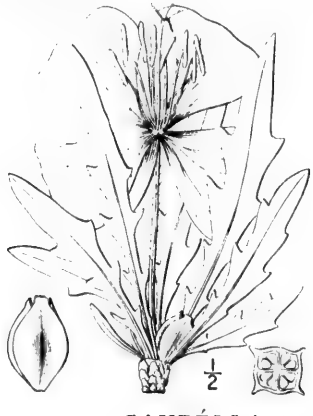
1. Lavauxia trìloba (Nutt.) Spach. Three-lobed Primrose. (Fig. 2596.)

OEnothera triloba Nutt. Journ. Acad. Phil. 2: 118. 1821.
Lavauxia triloba Spach, Hist. Veg. 4: 367. 1835.

Nearly glabrous throughout. Leaves petioled, runcinate-pinnatifid, or sinuate, sometimes ciliate, oblong-lanceolate in outline, 3′–12′ long, sometimes 2′ wide, the apex acute or acutish; flowers white or pink, 1′–2½′ broad; calyx-lobes lanceolate, spreading, the tube slender, somewhat dilated at the summit, many times longer than the ovary, 2′–4′ long; petals often 3-lobed; capsule ovoid, 4-wing-angled, reticulate veined, 6″–12″ long; seeds finely and densely tuberculate.

In dry soil, Kentucky and Tennessee to Arkansas, Utah and California, south to Mississippi, Texas and northern Mexico. May–July.

Lavauxia triloba Wàtsonii Britton, Mem. Torr. Club, 5: 235. 1894.
OEnothera triloba var. *parviflora* S. Wats. Proc. Am. Acad. 12: 251. 1876.
Annual; flowers smaller; fruit densely crowded. Perhaps a distinct species. Kansas (and Nebraska?).



2. Lavauxia brachycàrpa (A. Gray) Britton. Short-podded Primrose. (Fig. 2597.)

OEnothera brachycarpa A. Gray, Pl. Wright, 1: 70. 1852.
Lavauxia brachycarpa Britton, Mem. Torr. Club, 5: 235. 1894.

Low, perennial by a stout root, acaulescent or nearly so, softly canescent. Leaves basal, leathery, ovate to narrowly oblong, 3′–9′ long, acute or obtuse, lyrate-pinnatifid or sometimes nearly entire; petioles sometimes as long as the blade; flowers yellow, basal; calyx canescent, its tube 2′–4′ long, gradually dilated upward, its segments linear-lanceolate, about one-half as long as the tube, the tips free in the bud; petals 1′–1½′ long, undulate; capsules elliptic, 8″–9″ long, leathery or corky, the angles very thin, the faces somewhat wrinkled.

Montana to Kansas, Texas and New Mexico. April–July.

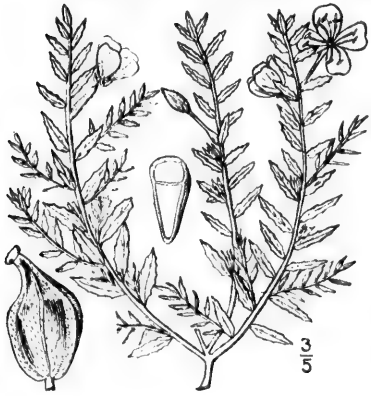
14. GAURÉLLA Small, Bull. Torr. Club, 23: 183. 1896.

Low perennial canescent or strigillose herbs with wiry diffusely branched stems. Leaves small, narrow, nearly entire or distantly toothed, narrowed into very short petioles. Flowers axillary, sessile. Calyx purplish, its tube cylindric, slightly dilated at the throat, its segments narrow, slightly longer than the tube, their tips united in the bud. Petals obovate, white or pink, spotted or striped with red. Stamens 8, the alternate ones longer; filaments filiform-subulate; anthers linear. Ovary 4-angled, short; united styles stout, enlarged

above; stigmas filiform. Capsules ovoid-pyramidal, sessile, attenuate into a curved beak, sharply 4-angled, the faces swollen. Seeds obovoid, angled, delicately striate. [Diminutive of *Gaura*.]

A monotypic genus of the west-central United States.

1. Gaurella guttulàta (Geyer) Small. Spotted Primrose. (Fig. 2598.)



OEnothera canescens Torr. Frem. Rep. 315. 1845. Not *OE. biennis* var. *canescens* T. & G. 1840.
OEnothera guttulata Geyer; Hook. Lond. Journ. Bot. 6: 222. 1847.
Gaurella guttulata Small, Bull. Torr. Club, 23: 183. 1896.

Diffusely branched from near or at the base, 4′–8′ high, canescent with appressed hairs, the branches decumbent or ascending. Leaves lanceolate or linear-lanceolate, nearly sessile and narrowed at the base, obtusish at the apex, 4″–8″ long, 1½″–2″ wide, repand-denticulate or entire; flowers axillary, white or pink, 9″–12″ wide; calyx-lobes lanceolate, canescent, the tube longer than the ovary; petals obovate, entire; capsule ovate, canescent, 4″–5″ long, angled, not winged, sessile; seeds angled, slipper-shaped.

Prairies, Nebraska to New Mexico. June–Sept.

15. MEGAPTÈRIUM Spach, Hist. Veg. 4: 363. 1835.

Low perennial herbs with stout sparingly branched stems. Leaves numerous, alternate, narrow, entire or slightly toothed. Flowers perfect, few, but large and showy, axillary, yellow. Calyx-tube much elongated, dilated toward the throat; calyx-segments narrow, the tips free in the bud. Petals 4, spreading. Stamens 8, the alternate ones longer; filaments filiform; anthers linear. Ovary 4-celled, 4-angled or 4-winged; united styles filiform; stigma 4-cleft; ovules few, sessile in rows. Capsules broadly 4-winged. Seeds few, crested. [Greek, broad-winged.]

About 3 species, in North America and Mexico.

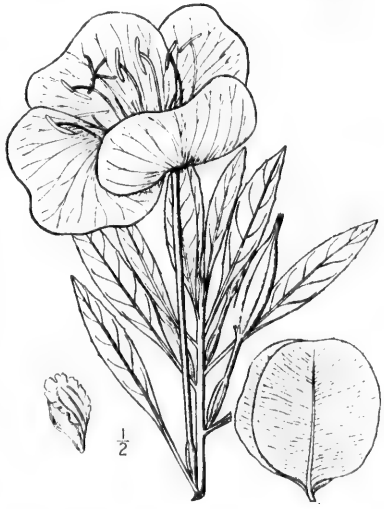
Flowers 3′–6′ broad; capsules suborbicular, 2′–2¼′ long. 1. *M. Missouriense.*
Flowers 1′–2′ broad; capsules oblong, 9″–14″ long. 2. *M. Fremontii.*

1. Megapterium Missouriénse (Sims) Spach. Missouri Primrose. (Fig. 2599.)

OEnothera Missouriensis Sims. Bot. Mag. pl. 1592. 1814.
OEnothera macrocarpa Pursh, Fl. Amer. Sept. 734. 1814.
Megapterium Missouriense Spach, Hist. Veg. 4: 364. 1835.

Tufted, stems decumbent or ascending, finely and densely canescent, 6′–12′ long. Leaves thick, linear-lanceolate or oblong-lanceolate, acuminate or acute at the apex, narrowed at the base into a slender petiole, or the uppermost nearly sessile, entire or remotely denticulate, 2′–6′ long, 2″–8″ wide; flowers axillary, yellow, 3′–6′ broad; calyx-lobes broadly lanceolate, spreading, the tube 2′–6′ long, 6–12 times the length of the ovary; capsule short-stalked, nearly orbicular, very broadly winged, finely canescent, or glabrate when mature, 1′–3′ long; seeds with an incised crest.

In dry soil, Missouri and Nebraska to Texas. May–July.



2. Megapterium Fremóntii (S. Wats.) Britton. Fremont's Primrose. (Fig. 2600.)

OEnothera Fremontii S. Wats. Proc. Am. Acad. 8: 587. 1873.
Megapterium Fremontii Britton, Mem. Torr. Club, 5: 236. 1894.

Tufted, stems mostly simple, ascending, 2′–6′ high, densely appressed-pubescent or canescent. Leaves lanceolate to somewhat oblanceolate, acuminate at the apex, narrowed at the base into a slender petiole, entire or very nearly so, silvery canescent, 1½′–3′ long, 2″–4″ wide; flowers yellow, axillary, 1′–2′ broad; calyx-lobes broadly lanceolate, acuminate, spreading, the tube canescent, very slender, 4–5 times the length of the ovary; capsule ovate, canescent, broadly winged, rounded at the summit, about 8″ long and 6″ wide, short-stalked; seeds not tuberculate.

Kansas to Texas. Summer.

16. GALPÍNSIA Britton, Mem. Torr. Club, 5: 236. 1894.

[SALPINGIA Raimann, in Engler & Prantl, Nat. Pfl. Fam. 3: Abt. 7, 217. 1893. Not *Salpinga* DC.]

Perennial caulescent herbs or shrubby plants with much branched or tufted stems. Leaves alternate, entire or toothed. Flowers perfect, yellow, axillary. Calyx-tube slender, narrowly funnelform, longer than the ovary; calyx-segments narrow, the tips free in the bud. Petals 4, spreading. Stamens 8, equal in length; filaments filiform; anthers linear. Ovary 4-celled, elongated; united styles filiform; stigma disk-like, entire. Capsules elongated, narrowed at the base, more or less curved. Seeds sometimes tuberculate. [Anagram of *Salpingia*.]

About 4 species, in the southern United States and Mexico.

1. Galpinsia Hàrtwegi (Benth.) Britton. Hartweg's Primrose. (Fig. 2601.)

OEnothera Hartwegi Benth. Pl. Hartw. 5. 1839.
OEnothera lavendulaefolia T. & G. Fl. N. A. 1: 501. 1840.
Galpinsia Hartwegi Britton, Mem. Torr. Club, 5: 236. 1894.

Somewhat woody, canescent or pubescent, much branched, the branches decumbent or ascending, 6′–15′ long. Leaves linear-oblong or lanceolate, obtuse or obtusish at the apex, mostly rounded at the base, and sessile, 6″–2′ long, 1½″–3″ wide, entire or slightly repand-denticulate; flowers axillary, yellow, 9″–2′ broad; calyx-lobes linear-lanceolate, acuminate, reflexed-spreading, the tube dilated above, many times longer than the ovary; petals rhombic-obovate, acutish; stigma discoid; capsule nearly sessile, narrowly cylindric, canescent, 6″–12″ long, 1″–2″ thick; seeds obscurely tuberculate.

Prairies, Nebraska and Colorado to Texas and northern Mexico. May–Sept.

17. MERÌOLIX Raf. Am. Month. Mag. 4: 192. 1818.

Biennial or perennial herbs with branched stems which sometimes become shrubby. Leaves alternate, narrow, entire or sharply serrate. Flowers perfect, regular, axillary, yellow. Calyx-tube funnelform, shorter than the ovary; calyx-segments narrow, keeled on the back, the tips free in the bud. Petals 4, often blotched at the base. Stamens 8, equal in length; filaments filiform; anthers narrow. Ovary 4-celled, 4-angled; stigma disk-like, 4-toothed; ovules numerous. Capsules linear, 4-angled, 4-celled, sessile. Seeds longitudinally grooved.

A monotypic genus of temperate North America.

1. **Meriolix serrulàta** (Nutt.) Walp. Tooth-leaved Primrose. (Fig. 2602.)

OEnothera serrulata Nutt. Gen. 1: 246. 1818.
Meriolix serrulata Walp. Repert. 2: 79. 1843.

Erect, simple or branched, canescent or glabrate, 4′–18′ high. Leaves linear-oblong or lanceolate, acute or acutish at the apex, narrowed at the base and usually sessile, sharply dentate or denticulate, 1′–3′ long, 2″–3″ wide; flowers yellow, axillary, 6″–9″ broad; calyx-lobes ovate, acuminate, somewhat reflexed, the tube funnelform, silvery canescent, shorter than or equalling the ovary; petals obovate, crenulate; stigma discoid; capsule sessile, linear-cylindric, silvery canescent, 8″–15″ long, about 1″ thick, slightly grooved longitudinally.

In dry soil, Manitoba and Minnesota to Texas and New Mexico. May–July.

Meriolix serrulàta spinulòsa (T. & G.) Small, Bull. Torr. Club, 23: 187. 1896.

OEnothera serrulata var. *spinulosa* T. & G. Fl. N. A. 1: 502. 1840.

More robust than the species. Leaves usually more spiny-toothed; flowers 1′–2′ broad; petals with a dark blotch at the base. Saskatchewan, south to Missouri and Texas.

18. GAÙRA L. Sp. Pl. 347. 1753.

Annual biennial or perennial herbs, somewhat woody at the base, with alternate narrow sessile leaves, and white pink or red flowers in terminal spikes or racemes. Calyx usually pubescent, its tube narrow, prolonged beyond the ovary, deciduous, 4-lobed (rarely 3-lobed), the lobes reflexed. Petals 4 (rarely 3), clawed, unequal. Stamens usually 8, declined; filaments filiform, each with a small scale at the base. Ovary 1-celled; united styles filiform, declined; stigma 4-lobed, surrounded by a cup-like border; ovules usually 4, pendulous. Fruit nut-like, ribbed or angled, indehiscent or nearly so, 1–4 seeded. Seeds unappendaged. [Greek, proud, some species being showy.]

About 18 species, natives of North America and Mexico.

Fruit sessile or very nearly so; flowers spicate.
  Flowers 1½″–2″ broad; stigma little exserted beyond its cup. 1. *G. parviflora.*
  Flowers 4″–5″ broad; stigma exserted beyond its cup.
    Flowers red, turning scarlet; fruit canescent. 2. *G. coccinea.*
    Flowers white, turning pink; fruit villous. 3. *G. biennis.*
Fruit pedicelled; flowers racemose.
  Fruit about 3″ long, the body nearly as thick as long. 4. *G. Michauxii.*
  Fruit 5″–7″ long, the body much longer than thick.
    Leaves mostly glabrous; fruit 7″ long, glabrous, its stout pedicel club-shaped. 5. *G. sinuata.*
    Leaves densely villous; fruit 5″ long, pubescent, its slender pedicel nearly filiform. 6. *G. villosa.*

1. **Gaura parviflòra** Dougl. Small-flowered Gaura. (Fig. 2603.)

Gaura parviflora Dougl.; Hook. Fl. Bor. Am. 1: 208. 1832.

Erect, branched, villous-pubescent with whitish hairs, 2°–5° high. Leaves ovate-lanceolate, acute or acuminate at the apex, repand-denticulate, narrowed at the base, softly pubescent, 1½′–4′ long, 4″–18″ wide; spikes elongated, usually densely flowered; flowers sessile, pink, 1½″–2″ broad, the ovary and calyx-tube slender; fruit sessile, narrowed at the base, 4-nerved, obscurely 4-angled, glabrous or nearly so, 3″–4″ long.

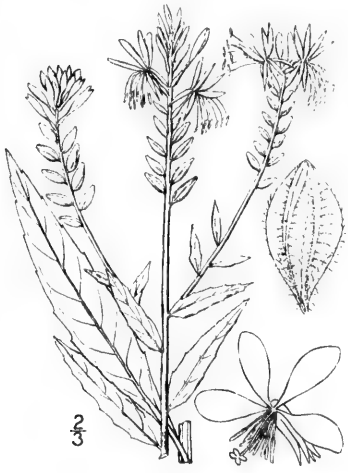
In dry soil, Nebraska and Missouri to Louisiana, Texas and Mexico, west to Oregon, Utah and New Mexico. May–Aug.

2. Gaura coccínea Pursh. Scarlet Gaura. (Fig. 2604.)

Gaura coccinea Pursh, Fl. Am. Sept. 733. 1814.

Erect or ascending, much branched, canescent, pubescent or glabrate, 6′–2° high. Leaves oblong, lanceolate, or linear-oblong, denticulate, repand or entire, acute or obtuse at the apex, narrowed at the base, 6″–18″ long, 2″–4″ wide; flowers sessile, red, turning scarlet, 4″–5″ broad; fruit sessile, terete below, 4-sided and narrowed above, canescent, 3″–4″ long.

Prairies and dry soil, Manitoba and Minnesota to Nebraska and Texas, west to Montana, Utah, Arizona, and in Mexico. May–Aug.



3. Gaura biénnis L. Biennial Gaura. (Fig. 2605.)

Gaura biennis L. Sp. Pl. 347. 1753.

Erect, much branched, villous or downy-pubescent, 2°–5° high. Leaves lanceolate or oblong-lanceolate, acute or acuminate at each end, pubescent or finally glabrate above, remotely denticulate, 2′–4′ long, 2″–5″ wide; spikes slender; flowers sessile, white, turning pink, 4″–5″ broad; fruit sessile, narrowed at each end, 4-ribbed, villous pubescent, 3″–4″ long.

In dry soil, Quebec and Ontario to Minnesota, south to Georgia, Nebraska and Arkansas. Ascends to 2200 ft. in Virginia. July–Sept.

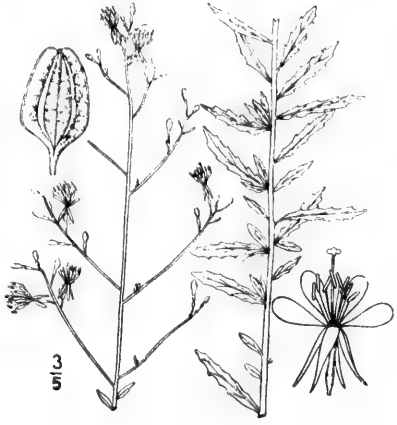
4. Gaura Michaùxii Spach. Michaux' Gaura. (Fig. 2606.)

Gaura Michauxii Spach, Nouv. Ann. Mus. Par. 4: 379. 1835.

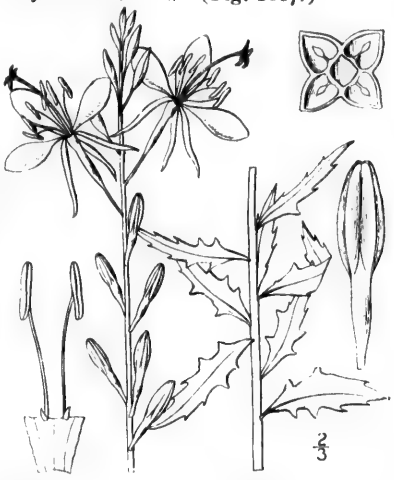
Gaura filipes Spach, loc. cit. 379. 1835.

Erect, glabrous or nearly so, paniculately branched above, 2°–6° high. Leaves linear or linear-oblong, acute or acutish at both ends, or obtuse at the apex, sinuate or denticulate, 1′–3′ long, 1½″–4″ wide; racemes usually short and loosely flowered, long-peduncled; flowers pedicelled, white, turning reddish, 3″–4″ broad; fruit ovoid, 4-angled above, 2″–3″ long, borne on a pedicel of nearly or quite its own length.

In dry fields, Virginia to Illinois and Kansas, south to Florida and Louisiana. July–Aug.



5. Gaura sinuàta Nutt. Wavy-leaved Gaura. (Fig. 2607.)

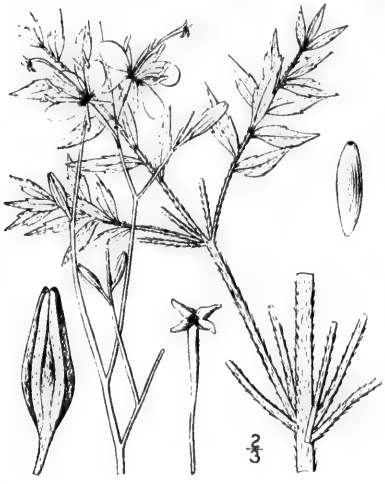


Gaura sinuata Nutt.; Ser. in DC. Prodr. 3: 44. 1828.

Perennial, erect or decumbent, glabrous, or rarely sparingly villous. Stem branched at the base or throughout, 1°–3° tall, usually naked above; leaves oblanceolate to lanceolate, or nearly linear, sinuate-toothed, 1′–3′ long, acute, on winged petioles or nearly sessile; calyx slightly pubescent, its tube above the ovary funnelform, 1″–2″ long, several times shorter than the linear segments; petals oblong-obovate, 4″–5″ long; stamens shorter than the petals; fruit about 7″ long, glabrous, 4-ridged and 4-grooved above the stout club-shaped pedicel.

In dry soil, Kansas to Arkansas and Texas. May–July.

6. Gaura villòsa Torr. Woolly Gaura. (Fig. 2608.)



Gaura villosa Torr. Ann. Lyc. N. Y. 2: 200. 1827.

Perennial, erect or nearly so, canescent or villous. Stems 1°–3° tall, simple or much branched, often naked above; leaves varying from lanceolate to oblanceolate or sometimes nearly linear, 1′–3′ long, sinuate-toothed or pinnatifid, acute or acuminate, sessile; calyx canescent, its tube above the ovary funnelform, 1″–2″ long, several times shorter than the linear acute segments; petals oblong-obovate, 5″–7″ long; stamens shorter than the petals; fruit about 5″ long, sparingly pubescent, the body sharply 4-angled, abruptly narrowed into a slender filiform pedicel.

In dry soil, Kansas to Arkansas and Texas. June–Sept.

19. STENOSÌPHON Spach, Nouv. Ann. Mus. Par. 4: 326. 1835.

Erect perennial herbs, with slender upright branches, alternate sessile narrow leaves, and white sessile flowers in narrow terminal spikes. Calyx-tube filiform, much prolonged beyond the ovary, 4-lobed. Petals 4, clawed, unequal. Stamens 8, declined, not appendaged by scales at the base; filaments filiform. Ovary 1-celled; united styles slender; stigma 4-lobed, subtended by a cup-like border as in *Gaura;* ovules commonly 4. Fruit 8-ribbed, indehiscent, 1-celled, 1-seeded. Seed pendulous. [Greek, referring to the slender calyx-tube.]

A monotypic genus of the south-central United States.

1. Stenosiphon linifòlium (Nutt.) Britton. Flax-leaved Stenosiphon. (Fig. 2609.)

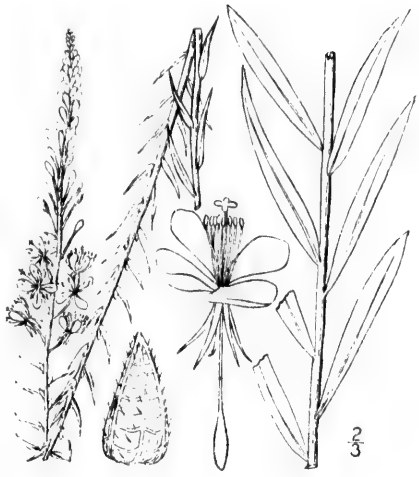
Gaura linifolia Nutt. in Long's Exp. 2: 100. 1823.

Stenosiphon virgatus Spach, Nouv. Ann. Mus. Par. 4: 326. 1835.

Stenosiphon linifolium Britton, Mem. Torr. Club, 5: 236. 1894.

Erect, slender, glabrous, 2°–5° high. Leaves sessile, lanceolate, linear-lanceolate or linear, acuminate or acute at the apex, narrowed or rounded at the base, entire, 1′–2′ long, the upper ones much smaller; spikes dense, narrow, sometimes 1° long in fruit; flowers white, 4″–6″ broad; calyx-tube very slender, 4″–5″ long; fruit ovoid, pubescent, 1″–1½″ long, very much shorter than the linear-subulate bracts.

Prairies, Kansas and Colorado to the Indian Territory and Texas. June-July.



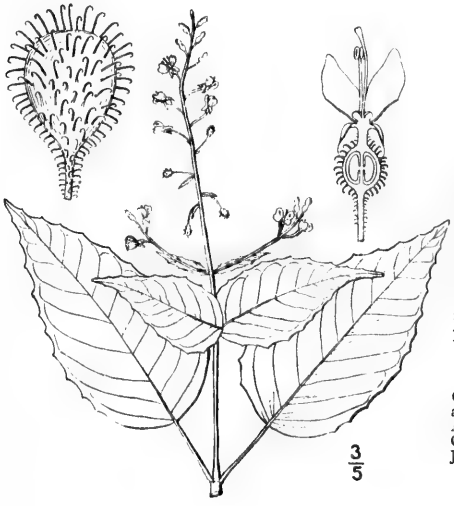
20. CIRCAÈA L. Sp. Pl. 9. 1753.

Low slender perennial herbs, with opposite petioled dentate leaves, and small white perfect flowers in terminal and lateral racemes. Calyx-tube hairy, slightly prolonged beyond the ovary, its limb 2-parted. Petals 2, obcordate, inserted on the perigynous disk. Stamens 2, alternate with the petals; filaments filiform. Ovary 1–2-celled; united styles filiform; stigma capitate; ovules usually 1 in each cavity. Fruit obovoid, small, indehiscent, densely bristly with hooked hairs, 1–2-celled. [Named for Circe, the enchantress.]

About 5 species, natives of the northern hemisphere. Besides the following, another occurs on the Pacific Coast.

Plant 1°–2° high; leaves ovate; hairs of the fruit stiff. 1. *C. Lutetiana.*
Plant 3′–8′ high; leaves cordate; hairs of the fruit weak. 2. *C. alpina.*

1. Circaea Lutetiàna L. Enchanter's Nightshade. (Fig. 2610.)



Circaea Lutetiana L. Sp. Pl. 9. 1753.

Erect, branching, finely pubescent, at least above; stem swollen at the nodes, 1°–2° high. Leaves slender-petioled, ovate, acuminate at the apex, rounded or rarely slightly cordate at the base, remotely denticulate, 2′–4′ long; pedicels 2″–4″ long, slender, spreading in flower, reflexed in fruit; bracts deciduous; flowers about 1½″ broad; fruit broadly obovoid, nearly 2″ long, densely covered with stiff hooked hairs.

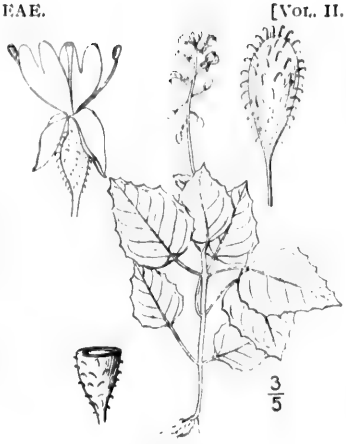
In woods, Nova Scotia to western Ontario, south to Georgia, Nebraska and Missouri. Also in Europe and Asia. Ascends to 2000 ft. in Virginia. Called also Bindweed Nightshade. June-Aug.

2. Circaea alpina L. Smaller Enchanter's Nightshade. (Fig. 2611.)

Circaea alpina L. Sp. Pl. 9. 1753.

Smaller, 3′–8′ high, simple or branched, weak, glabrate, or pubescent above. Leaves ovate, slender-petioled, acute or acuminate at the apex, more or less cordate at the base, coarsely dentate, 1′–2′ long; flowers about 1″ broad; pedicels 1½″–2″ long, reflexed in fruit; fruit narrowly obovoid, about 1″ long, covered with weak soft hooked hairs.

In cold moist woods, Labrador to Alaska, south to Georgia, Indiana, Michigan and Minnesota. Also in Europe and Asia. Leaves thin, somewhat shining. Ascends to 6300 ft. in North Carolina. July–Sept.



Family 88. **TRAPÀCEAE** Dumort, Fl. Belg. 90. 1827.

Water-nut Family.

Aquatic herbs, with opposite pinnatifid submerged leaves, and clustered rhombic-ovate dentate floating ones with inflated petioles. Flowers perfect, axillary, solitary, short-peduncled. Calyx-tube short, the limb 4-parted, the lobes persistent. Petals 4, sessile, inserted on the perigynous disk. Stamens 4, inserted with the petals; filaments subulate-filiform. Ovary 2-celled, conic above; style subulate; ovule 1 in each cavity. Fruit coriaceous or bony, large, 2–4-spinose or swollen at the middle, 1-celled, 1-seeded, indehiscent. Seed inverted.

A single genus of 3 species, natives of Europe, tropical Asia and Africa.

1. **TRÀPA** L. Sp. Pl. 120. 1753.

Characters of the family. [Latin, from Calcitrapa, the Caltrop.]

1. Trapa nàtans L. Swimming Water-nut. Water-Chestnut. Water-Caltrop. (Fig. 2612.)

Trapa natans L. Sp. Pl. 120. 1753.

Rooting in the mud at the bottom of lakes or slow streams; stem often several feet long. Submerged leaves approximate, pectinately dissected, 1′–4′ long; floating leaves in a rosette sometimes 1° broad, their blades rhombic-ovate, sharply dentate above, broadly cuneate and entire below, about 1′ wide, glabrous and shining above, the conspicuous veins of the lower surface beset with short stiff hairs; petioles of the floating leaves 2′–6′ long, inflated and spongy; flowers white, about 3″ broad; fruit 1′–2′ long, armed with 4 somewhat recurved spines.

Naturalized in ponds, eastern Massachusetts, and near Schenectady, N. Y. Native of Europe. Called also Sanghara-nut. Seed mealy, edible. June–July.

Family 89. **HALORAGIDÀCEAE** Kl. & Garcke, Bot. Erg. Wald. 151. 1852.

Water-milfoil Family.

Perennial or rarely annual herbs, mainly aquatic, with alternate or verticillate leaves, the submerged ones often pectinate-pinnatifid. Flowers perfect, or monoecious, or dioecious, axillary, in interrupted spikes, solitary or clustered.

Calyx-tube adnate to the ovary, its limb entire or 2–4-lobed. Petals small, 2–4, or none. Stamens 1–8. Ovary ovoid-oblong, or short-cylindric, 2–8-ribbed or winged, 1–4-celled; styles 1–4; stigmas papillose or plumose. Fruit a nutlet, or drupe, compressed, angular, ribbed or winged, indehiscent, of 2–4 1-seeded carpels. Endosperm fleshy; cotyledons minute.

Eight genera and about 100 species, of wide geographic distribution.

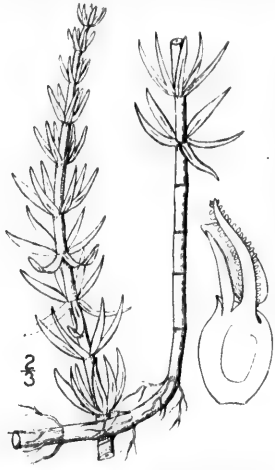
Stamen 1; ovary 1-celled. 1. *Hippuris.*
Stamens 2–8; ovary 3–4-celled.
Fruit 3-angled or 4-angled. 2. *Proserpinaca.*
Fruit of 4 carpels. 3. *Myriophyllum.*

1. HIPPÙRIS L. Sp. Pl. 4. 1753.

Aquatic herbs, with simple erect stems, and verticillate simple entire leaves. Flowers small, axillary, perfect, or sometimes neutral or pistillate only. Limb of the calyx minute, entire. Petals none. Stamen 1, inserted on the margin of the calyx. Style filiform, stigmatic its whole length, lying in a groove of the anther. Fruit a small 1-celled 1-seeded drupe. [Greek, mare's-tail.]

Three known species, natives of the north temperate and arctic zone and of southern South America. Besides the 2 following, the third occurs in northwestern arctic America.

Leaves linear or lanceolate, in verticils of 5–12. 1. *H. vulgaris.*
Leaves obovate, oblong, or oblanceolate, in verticils of 4–6. 2. *H. tetraphylla.*



1. Hippuris vulgàris L. Bottle Brush. Mare's-tail. Joint-weed. (Fig. 2613.)

Hippuris vulgaris L. Sp. Pl. 4. 1753.

Stem slender, glabrous, 8′–20′ high. Leaves linear or lanceolate, acute, sessile, ½″–12″ long, 1″–2″ wide, in crowded verticils of 6–12, more or less sphacelate at the apex; stamen with a short thick filament, and comparatively large 2-celled anther, dehiscent by lateral slits; seeds ovoid, hollow in the interior; stigma persistent.

Swamps and bogs, Labrador and Greenland to Alaska, south to Maine, the shores of Lake Superior, and in the Rocky Mountains to New Mexico, and on the Pacific Coast to California. Also in Patagonia, and in Europe and Asia. Summer. English names, Cat's-tail, Paddock-pipes, Knotgrass.

2. Hippuris tetraphýlla L.f. Four-leaved Mare's-tail. (Fig. 2614.)

Hippuris tetraphylla L. f. Suppl. 81. 1781.
Hippuris maritima Hell. Dissert. Hippur. *pl. 1.* 1786.

Smaller than the preceding species. Stem 4′–15′ high; leaves obovate or oblanceolate, entire, in verticils of 4–6, not sphacelate at the apex or but slightly so, 4″–7″ long.

Labrador and Quebec to Hudson Bay and Alaska. Also in northern Europe and Asia. Summer.

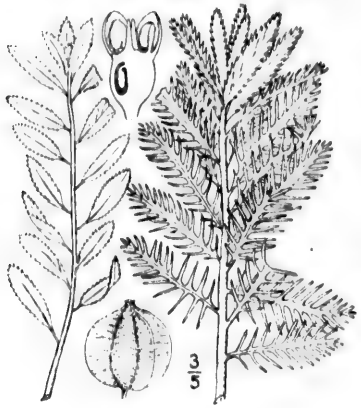
2. PROSERPINÀCA L. Sp. Pl. 88. 1753.

Aquatic herbs, with simple stems decumbent at the base. Leaves alternate, lanceolate, dentate or pectinate-pinnatifid. Flowers perfect. Tube of the calyx adnate to the triquetrous ovary, the limb 3–4-parted. Petals none. Stamens 3–4. Styles 3–4, cylindric or conic-subulate, stigmatic above the middle. Fruit bony, 3–4-angled, 3–4-celled, with 1 seed in each cavity. [Middle Latin, forward-creeping.]

Two known species, natives of eastern North America, extending to the West Indies.

Emersed leaves linear-lanceolate to oblong, serrate; fruit sharply angled. 1. *P. palustris.*
Leaves all pectinate-pinnatifid; fruit obtusely angled. 2. *P. pectinata.*

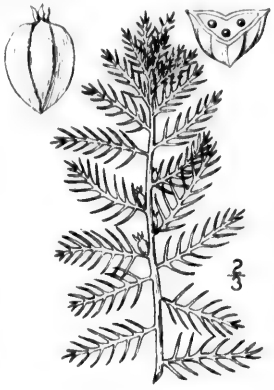
1. **Proserpinaca palústris** L. Mermaid-weed. (Fig. 2615.)



Proserpinaca palustris L. Sp. Pl. 88. 1753.

Glabrous, simple or sometimes branched, 8′–20′ high. Emersed leaves oblong or linear-lanceolate, 10″–2′ long, 1‴–6″ wide, sharply serrate, the submerged ones pectinate or pectinate-pinnatifid into stiff linear acute segments which are often serrulate, bearing a minute black spine in their axils; flowers solitary or several together, sessile in the axils of the emersed leaves; fruit about 2″ long and 2″ thick, sharply 3-angled, the faces concave, smooth or rugose.

In swamps, New Brunswick to Lake Huron, south to Florida, Iowa and Central America. Also in Cuba. July.



2. **Proserpinaca pectinàta** Lam. Cut-leaved Mermaid-weed. (Fig. 2616.)

Proserpinaca pectinata Lam. Tabl. Encycl. *pl. 50, f. 1.* 1: 214. 1791.
Proserpinaca pectinacea T. & G. Fl. N. A. 1: 528. 1840.

Resembling the preceding species, but usually smaller. Leaves all pectinate or pinnatifid, the segments shorter and rarely serrulate, more subulate, or capillary; calyx-lobes broader; fruit smaller, about 1½‴ long by 1″ thick, the faces flat or slightly convex, often wrinkled or somewhat tuberculate, the angles obtuse.

In sandy swamps near the coast, eastern Massachusetts to Florida, west to Louisiana. Summer.

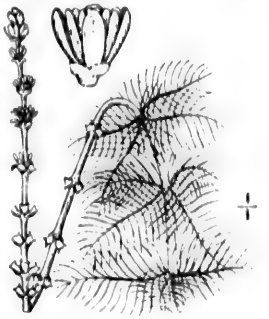
3. **MYRIOPHÝLLUM** L. Sp. Pl. 992. 1753.

Aquatic herbs, with verticillate or alternate leaves, the emersed ones entire, dentate or pectinate, the submerged ones pinnatifid into capillary segments, and axillary commonly monoecious 2-bracted flowers, often interruptedly spicate. Upper flowers generally staminate with a very short calyx-tube, its limb 2–4-lobed, or none; petals 2–4; stamens 4–8. Intermediate flowers often perfect. Lower flowers pistillate, the calyx more or less deeply 4-grooved and with 4 minute lobes, or none; ovary 2–4-celled; ovule 1 in each cavity, pendulous; styles 4, short, often plumose. Fruit splitting at maturity into 4 bony 1-seeded indehiscent carpels which are smooth, angled or tuberculate on the back. [Greek, myriad-leaved.]

About 20 species, of wide geographic distribution. In addition to the following, another occurs in the western United States. The plants flower in summer.

Carpels smooth.
  Flowers in emersed spikes.
    Floral leaves shorter than the flowers.
      Flowers in whorls. 1. *M. spicatum.*
      Flowers alternate, or the lower sub-verticillate. 3. *M. alterniflorum.*
    Floral leaves longer than the flowers, pinnatifid. 2. *M. verticillatum.*
    Floral leaves reduced to minute bracts. 4. *M. tenellum.*
  Flowers on both emersed and submersed stems. 5. *M. humile.*
  Flowers only on submersed stems. 9. *M. proserpinacoides.*
Carpels rough or tuberculate.
  Flowers on emersed spikes.
    Floral leaves ovate or lanceolate, serrate. 6. *M. heterophyllum.*
    Floral leaves linear, pectinate. 7. *M. pinnatum.*
  Flowers on submersed stems. 8. *M. Farwellii.*

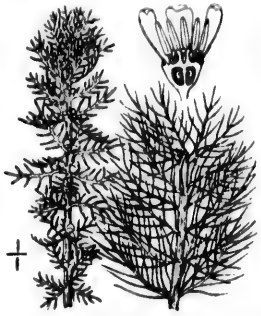
1. Myriophyllum spicàtum L. Spiked Water-Milfoil. (Fig. 2617.)



Myriophyllum spicatum L. Sp. Pl. 992. 1753.

Submerged leaves in whorls of 4's and 5's, dissected into capillary divisions. Floral leaves ovate, entire or serrate, usually shorter than the flowers, or sometimes none; spike 1′–3′ long; petals 4, deciduous; stamens 8; fruit about 1″ long and 1½″ thick; carpels rounded on the back, with a deep wide groove between them, smooth, or very rarely slightly rugose.

In deep water, Newfoundland to Manitoba and the Northwest Territory, south to Florida, Iowa, Utah and California. Also in Europe and Asia.



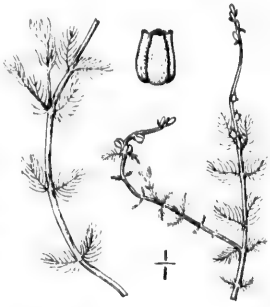
2. Myriophyllum verticillàtum L. Whorled Water-Milfoil. (Fig. 2618.)

Myriophyllum verticillatum L. Sp. Pl. 992. 1753.

Submerged leaves in crowded whorls of 3's and 4's, the capillary divisions very slender, sometimes finer than those of *M. spicatum*, about 10 pairs, 1′–1½′ long, often minutely scabrate. Floral leaves pectinate or pectinate-pinnatifid, much longer than the flowers; spike 2′–6′ long; petals of the staminate flowers 4, purplish; stamens 8; fruit 1″–1½″ long, and about 1″ thick, somewhat gibbous at the base.

In both deep and shallow water, Quebec and Ontario to Florida, west to Minnesota and California. Also in Europe and Asia.

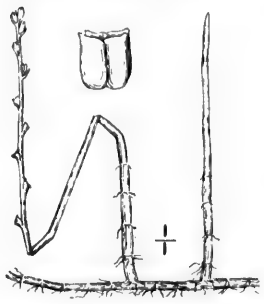
3. Myriophyllum alterniflòrum DC. Loose-flowered Water-Milfoil. (Fig. 2619.)



Myriophyllum alterniflorum DC. Fl. France, Suppl. 529. 1815.

Submerged leaves usually in whorls of 3–5, occasionally scattered, the pinnate divisions capillary, 3″–5″ long. Spikes short, 1′–2′ long, numerous or several on the branching stems; uppermost floral leaves ovate or linear, entire or minutely toothed, smaller than the flowers, early deciduous; petals of the staminate flowers 4, longer than the stamens, pale rose-color, deciduous; stamens 8; fruit nearly 1″ long, slightly less than 1″ thick; carpels rounded on the back, with a deep groove between them.

In deep water, Lake Memphremagog, Quebec, near the United States boundary; Lake Temiscouata, Quebec; north to Newfoundland and Greenland. Common in Europe.



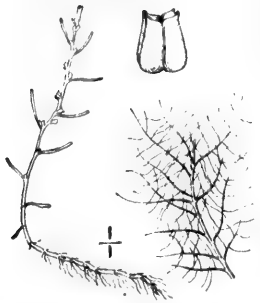
4. Myriophyllum tenéilum Bigel. Slender Water-Milfoil. (Fig. 2620.)

Myriophyllum tenellum Bigel. Fl. Bost. Ed. 2, 346. 1824.

Stems slender, scape-like, nearly leafless, simple, erect, 1½′–6′ or rarely 12′ high. Rhizome creeping, sending up many sterile stems; flowers alternate, solitary; uppermost bracts obovate, often longer than the flowers, the lower oblong, often shorter, the lowest minute or none; petals 4, purplish, longer than the stamens; stamens 4; fruit ½″ long and about as thick at the top, sometimes enlarged at the base; carpels rounded or obtusely angled on the back, separated by a shallow groove.

Sandy bottoms of ponds and streams, Newfoundland to New Jersey and Pennsylvania, west to Michigan.

5. Myriophyllum hùmile (Raf.) Morong. Low Water-Milfoil. (Fig. 2621.)

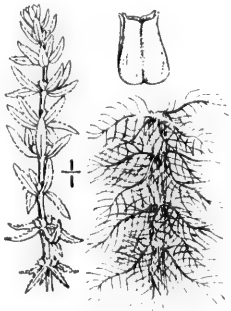


Burshia humilis Raf. Med. Rep. (II.) 5: 361. 1808.
Myriophyllum ambiguum Nutt. Gen. 2: 212. 1818.
Myriophyllum humile Morong, Bull. Torr. Club, 18: 242. 1891.

Typical form terrestrial, 1′–1½′ high, rooting in mud on shores. Leaves linear, entire or pectinate. Floating forms with stems often 12′ long, branched, with all or most of the leaves pectinate into capillary segments; these produce the typical form if they take root; petals 4, purplish; stamens 4; fruit usually less than 1″ long and about as thick at base, its carpels smooth, or rarely slightly roughened, separated by a shallow groove.

In ponds, Massachusetts and Rhode Island to Maryland and Illinois. Variable in appearance, but the variations are manifestly only conditions of the plant dependent upon its environment.

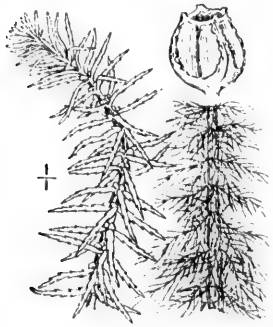
6. Myriophyllum heterophýllum Michx. Various-leaved Water-Milfoil. (Fig. 2622.)



Myriophyllum heterophyllum Michx. Fl. Bor. Am. 2: 191. 1803.

Floral leaves in whorls of 3's to 5's, linear, ovate or lanceolate, serrate or rarely entire, much longer than the flowers. Submerged leaves subverticillate or scattered, crowded, pectinate-pinnatifid, about 10″ long, the divisions 6–10 pairs, capillary; flowering spike elongated (sometimes 18′ long); petals 4; stamens 4, rarely 6; fruit 1″ long, and slightly longer than thick; carpels 2-keeled on the back, usually slightly scabrous.

In ponds, Ontario and New York to Florida, west to Minnesota, Texas and Mexico.



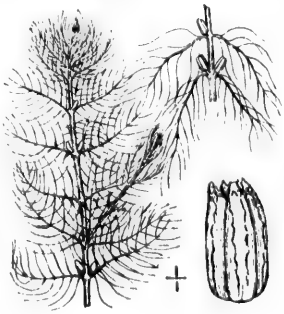
7. Myriophyllum pinnàtum (Walt.) B.S.P. Pinnate Water-Milfoil. (Fig. 2623.)

Potamogeton pinnatum Walt. Fl. Car. 90. 1788.
Myriophyllum scabratum Michx. Fl. Bor. Am. 2: 190. 1803.
Myriophyllum pinnatum B.S.P. Prel. Cat. N. Y. 16. 1888.

Leaves in whorls of 3's–5's, or sometimes scattered, the floral ones linear, serrate or pectinate, 2½″–6″ long, gradually passing into the submerged ones which are crowded, pinnately dissected, the divisions few and capillary; spikes 4′–8′ long; petals purplish; stamens 4, very rarely 6; carpels strongly 2-keeled and scabrous on the back, separated by deep grooves; mature fruit about 1″ long and somewhat more than ½″ thick.

In ponds, Rhode Island to Florida, west to Missouri, Louisiana, Texas, and south to Panama.

8. Myriophyllum Farwéllii Morong. Farwell's Water-Milfoil. (Fig. 2624.)



M. Farwellii Morong, Bull. Torr. Club, 18: 146. 1891.

Dioecious (?) Specimens with submerged leaves only, in whorls of 3's–6's, or scattered, narrow, pinnately parted, the divisions finely capillary in 5–7 opposite or subopposite pairs, with minute black spines in the axils; petals 4, purplish, oblong; pistillate flowers only seen; styles 4, short; stamens 4, minute, abortive; fruit about 1″ long and ½″ thick; carpels crossed longitudinally by 3–4 rough tuberculate or slightly toothed ridges, 2 on the back and commonly 1 on each margin; groove between the carpels shallow.

In still water, Maine to Michigan.

9. **Myriophyllum proserpinacoides** Gill. Chilian Water-Milfoil.

(Fig. 2625.)

Myriophyllum proserpinacoides Gill.; Hook. Bot. Misc. 3: 313. 1833.

Dioecious. Leaves all alike and submerged, glabrous, somewhat glaucous, pectinate-pinnatifid in crowded whorls of 4's and 5's, 7″–10″ long; segments capillary or sometimes linear-spatulate, 20–25 in number, about 2½″ long, minutely cuspidate; pistillate flowers axillary, about ½″ high, without petals; stigmas 4, white, plumose; young carpels glabrous; small white hair-like bracts are borne at the bases of the leaves and among the flowers.

In Hopkins' Pond, near Haddonfield, N. J. (S. N. Rhoads, 1890). Apparently established. Introduced first into the tanks for aquatic plants at Mr. E. D. Sturtevant's nursery, at Bordentown, N. J. Native of Chili. Staminate flowers not seen, and the plant referred to this species with some hesitation.

Family 90. **ARALIÀCEAE** Vent. Tabl. 3: 2. 1799.

GINSENG FAMILY.

Herbs, shrubs or trees, with alternate or verticillate (rarely opposite) leaves, and perfect or polygamous flowers in umbels, heads, racemes or panicles. Calyx-tube adnate to the ovary, its limb truncate or toothed. Petals usually 5, valvate or slightly imbricate, sometimes cohering together, inserted on the margin of the calyx. Stamens as many as the petals and alternate with them (rarely more), inserted on the epigynous disk; filaments filiform or short; anthers ovoid or oblong, introrse. Ovary inferior, 1–several-celled; styles as many as the cavities of the ovary; ovules 1 in each cavity, pendulous, anatropous. Fruit a berry or drupe. Seeds flattened, or somewhat 3-angled, the testa thin; endosperm copious, fleshy; embryo small, near the hilum; cotyledons ovate or oblong.

About 52 genera and 450 species, widely distributed in temperate and tropical regions.

Herbs, shrubs or trees; leaves alternate, decompound; styles 5. 1. *Aralia.*
Herbs; leaves verticillate, digitately compound; styles 2-3. 2. *Panax.*

1. **ARÀLIA** L. Sp. Pl. 273. 1753.

Perennial herbs, shrubs or trees, with alternate pinnately or ternately decompound leaves, and small mostly perfect flowers, in racemose corymbose or paniculate umbels. Flowers white or greenish. Petioles sheathing at the base. Stipules none or inconspicuous. Pedicels jointed below the flowers. Calyx truncate or 5-toothed. Petals 5, spreading, obtuse, or with short inflexed points, valvate or slightly imbricate. Stamens 5. Disk depressed. Ovary 5-celled; styles 5. Fruit a small berry enclosing about 5 seeds.

About 27 species, natives of North America and Asia. Besides the following, 2 others occur in the western and southwestern United States.

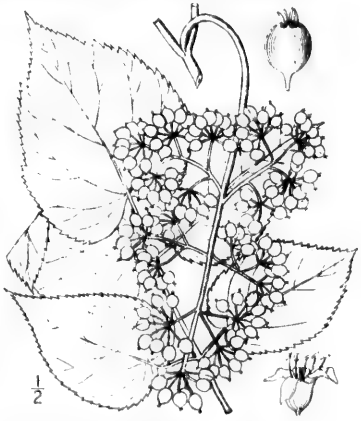
Umbels numerous, paniculed or racemose.
  Spiny shrub or tree; leaflets thick, ovate. 1. *A. spinosa.*
  Branching unarmed herb; leaflets thin, large, cordate. 2. *A. racemosa.*
Umbels 2–7, terminal or corymbose.
  Plant glabrate; leaf and peduncle arising from the rootstock. 3. *A. nudicaulis.*
  Plant bristly or hispid; stem leafy, erect. 4. *A. hispida.*

1. Aralia spinòsa L. Hercules' Club. Angelica or Spikenard Tree. (Fig. 2626.)

Aralia spinosa L. Sp. Pl. 273. 1753.

A shrub or tree, reaching a maximum height of about 40° and trunk diameter of 12′, but usually much smaller. Stem, branches and petioles spiny; leaves long-petioled, bipinnate, usually with a leaflet at the base of each pinna; leaflets ovate, thick, acute or acuminate, stalked, serrate, dark green above, glaucous and sometimes slightly pubescent beneath, 1′–4′ long; umbels very numerous, in terminal compound panicles; involucels of several short bractlets; peduncles and pedicels pubescent; flowers white, 2″ broad; pedicels 3″–4″ long in fruit; fruit ovoid, black, 5-lobed, about ⅜″ long; styles distinct.

In low grounds and along streams, southern New York to Florida, west to Indiana, Missouri and Texas. Freely planted for ornament, and sometimes escaping from cultivation further north. June–Aug. Also called Wild Orange, and Toothache-tree.



2. Aralia racemòsa L. American Spikenard. Indian-root. (Fig. 2627.)

Aralia racemosa L. Sp. Pl. 273. 1753.

Herbaceous, divergently much branched, unarmed, 3°–6° high, glabrous or slightly pubescent. Roots large and thick, aromatic; leaves ternately or rarely quinately compound, the divisions pinnate; leaflets broadly ovate or orbicular, thin, acuminate at the apex, cordate at the base, 2′–6′ long, sharply and doubly serrate, sometimes pubescent on the veins beneath; umbels numerous, racemose-paniculate; peduncles and pedicels puberulent; involucels of a few subulate bractlets; flowers greenish, about 1″ broad; fruit nearly globular, dark purple or reddish-brown, about 3″ in diameter; styles united below.

In rich woods, New Brunswick to Georgia, west to Minnesota and Missouri. Called also Spignet. July–Aug.

3. Aralia nudicaùlis L. Wild or Virginian Sarsaparilla. (Fig. 2628.)

Aralia nudicaulis L. Sp. Pl. 274. 1753.

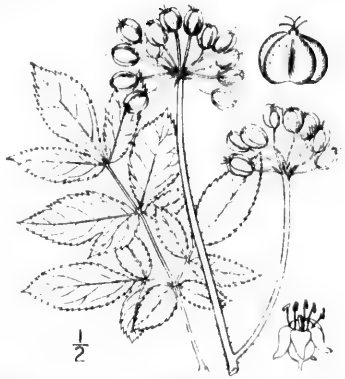
Acaulescent or nearly so. Rootstock long; leaf usually solitary, arising with the peduncle from the very short stem, both sheathed at the base by dry thin ovate or orbicular scales; petioles erect, 6′–12′ long; primary divisions of the leaf ternate, slender-stalked, pinnately 3–5-foliolate; leaflets sessile or short-stalked, oval or ovate, acuminate at the apex, rounded or narrowed at the base, finely serrate, 2′–5′ long, often pubescent on the veins beneath; peduncle usually shorter than the petiole; umbels commonly 3, simple; involucre none; pedicels slender, glabrous; flowers greenish, 1½″ broad; fruit globose, purplish-black, about 3″ long; 5-lobed when dry.

In woods, Newfoundland to Manitoba, North Carolina and Missouri. Called also Small Spikenard, Rabbit-root. May–June.

Aralia nudicàulis prolifera A. C. Apgar, Bull. Torr. Club, **14**: 166. 1887.
Leaves more divided and umbels compound. Perhaps a mere form. Western New Jersey.

Aralia nudicàulis elongàta Nash, Bull. Torr. Club, 20: 374. 1893.

Leaflets longer and narrower, coarsely serrate, paler beneath. Catskill Mountains.



4. Aralia hìspida Vent. Bristly Sarsaparilla. Wild Elder. (Fig. 2629.)

Aralia hispida Vent. Hort. Cels, *pl. 41.* 1800.

Erect, leafy, 1°–3° high, the stem and petioles more or less hispid with slender bristles. Leaves petioled, or the upper nearly sessile, bipinnate; leaflets ovate or oval, acute at the apex, narrowed or rounded at the base, glabrous or pubescent on the veins beneath, sharply and irregularly serrate, 1′–2′ long; umbels several, slender-peduncled, simple, corymbo-racemose at the summit of the stem; pedicels glabrous; flowers white, 1″ broad; fruit dark purple, 3″–4″ in diameter, strongly 5-lobed when dry.

In rocky or sandy woods, and clearings, Newfoundland and Labrador to North Carolina, west to Ontario, Minnesota and Indiana. June–July.

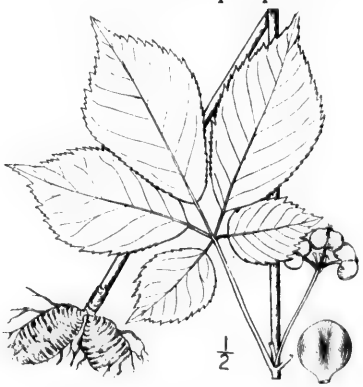
2. PANAX L. Sp. Pl. 1058. 1753.

Erect perennial herbs, from globose or elongated aromatic roots, with a verticil of digitately compound leaves at the summit of the stem. Umbel solitary, terminal, simple. Flowers greenish or white, polygamous. Calyx-limb obscurely 5-toothed. Petals 5, spreading. Stamens 5, alternate with the petals. Styles 2–3. Fruit a small drupe-like somewhat flattened berry, enclosing 2–3 seeds. [Greek, all-healing.]

About 7 species, natives of eastern North America and central and eastern Asia.

Leaflets 5, ovate or obovate, stalked, acuminate. 1. *P. quinquefolium.*
Leaflets 3–5, oval, to oblanceolate, sessile, obtuse. 2. *P. trifolium.*

1. Panax quinquefòlium L. Ginseng. (Fig. 2630.)

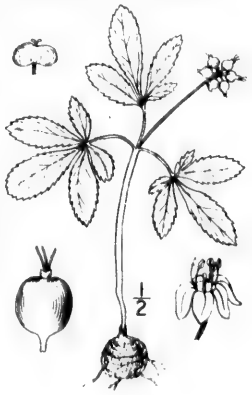


Panax quinquefolium L. Sp. Pl. 1058. 1753.
Ginseng quinquefolium Wood, Bot. & Flor. 142. 1873.

Glabrous, 8′–15′ high. Root fusiform, deep, simple or branched. Petioles 1½′–4′ long; leaflets 5 (rarely 6–7), stalked, thin, ovate or obovate, acuminate at the apex, rounded or narrowed at the base, 2′–5′ long, 1′–2′ wide, irregularly dentate; peduncle slender, 1′–2′ long; umbel 6–20-flowered; pedicels 3″–6″ long in fruit; flowers greenish yellow, about 1″ broad; styles usually 2; fruit flattened, somewhat didymous, bright crimson, 5″ broad.

In rich woods, Quebec to Alabama, Minnesota, Nebraska and Missouri. July–Aug.

2. Panax trifòlium L. Dwarf Ginseng or Ground-nut. (Fig. 2631.)



Panax trifolium L. Sp. Pl. 1050. 1753.
Ginseng trifolium Wood, Bot. & Flor. 142. 1873.

Glabrous, 3′–8′ high. Root globose, deep, about ½′ in diameter, pungent to the taste; petioles ½′–2′ long; leaflets 3–5, oval to oblanceolate, sessile, obtuse, usually narrowed at the base, 1′–1½′ long, 3″–8″ wide, dentate or serrate; peduncles 1′–2½′ long; pedicels 1″–1½″ long in fruit; flowers white, often monoecious, about 1″ broad; styles, usually 3; fruit mostly 3-angled (or when with 2 styles, didymous), yellow, about 2″ broad.

In moist woods and thickets, Nova Scotia to Georgia, west to Ontario, Minnesota, Iowa and Illinois. April–June.

Family 91. **UMBELLÍFERAE** B. Juss. Hort. Trian. 1759.*

CARROT FAMILY.

Herbs, with alternate decompound compound or sometimes simple leaves, the petioles often dilated at the base, the stems often hollow. Stipules none, or rarely present and minute. Flowers small, white, yellow, greenish, blue or purple, generally in compound or simple umbels, rarely in heads or capitate clusters, often polygamous. Umbels and umbellets commonly involucrate or involucellate. Calyx-tube wholly adnate to the ovary, its margin truncate or 5-toothed, the teeth seldom conspicuous. Petals 5, inserted on the margin of the calyx, usually with an inflexed tip, often emarginate or 2-lobed, those of the outer flowers sometimes larger than those of the inner. Stamens 5, inserted on the epigynous disk; filaments filiform; anthers versatile. Ovary inferior, 2-celled; styles 2, filiform, distinct, straight, or recurved after flowering, persistent, often borne on a conic or depressed stylopodium; ovules 1 in each cavity, pendulous, anatropous. Fruit dry, composed of 2 carpels (mericarps), which generally separate from each other at maturity along the plane of their contiguous faces (the commissure). Fruit either flattened laterally (at right angles to the commissure), or dorsally (parallel to the commissure), or nearly terete (not flattened). Carpels after parting from each other supported on the summit of a slender axis (the carpophore), each with 5 primary ribs in their pericarps (rarely ribless), and in some genera with 4 additional secondary ones, the ribs or some of them often winged. Pericarp membranous or corky-thickened, usually containing oil-tubes between the ribs, or under the ribs and on the commissural sides, sometimes irregularly scattered, sometimes none. Seeds 1 in each carpel, usually adnate to the pericarp, their inner faces flat or concave; seed-coat thin; endosperm cartilaginous; embryo small, placed near the hilum; cotyledons ovate, oblong or linear.

About 170 genera and 1600 species, of wide geographic distribution, not abundant in tropical regions. The mature fruit is necessary for the certain determination of most of the genera and many of the species, the flowers being very much alike in all, and the leaves exhibiting great diversity in the same genus. The family is also known as AMMIACEAE. The following key is wholly artificial.

* **Leaves simple, undivided, sometimes slightly lobed.**

Leaves narrow, mostly spiny-toothed; flowers in dense heads. 18. *Eryngium.*
Leaves ovate and perfoliate in our species; flowers yellow. 27. *Bupleurum.*
Leaves orbicular or ovate, slender-petioled, often peltate.
  Ribs of the fruit simple; leaves 1 at a node. 42. *Hydrocotyle.*
  Ribs anastomosing; leaves tufted at the nodes. 43. *Centella.*
Leaves reduced to hollow jointed petioles or phyllodia.
  Umbels simple, few-flowered; plant low. 16. *Liliaeopsis.*
  Umbels compound; plant tall. 5. *Oxypolis.*

* * **Leaves, or some of them, pinnate, ternate, digitate, decompound or deeply lobed.**

Flowers in sessile or short-stalked capitate clusters opposite the leaves. 2. *Caucalis.*
Flowers in simple umbels; leaves pedately lobed. 42. *Hydrocotyle.*
Flowers in dense peduncled heads; leaves sometimes bristly. 18. *Eryngium.*
Flowers in more or less compound umbels.
  Flowers white, greenish or pink.
    Fruit, or its beak, bristly, papillose or tuberculate.
      Leaves digitately 3-7-parted or lobed. 19. *Sanicula.*
      Leaves pinnately or ternately decompound or dissected.
        Fruit linear, ribbed, long-attenuate at the base. 29. *Washingtonia*
        Fruit linear, with a beak much longer than the body. 30. *Scandix.*
        Fruit ovoid, small, tuberculate or bristly.
          Carpels flattened dorsally.
            Seed-face concave. 23. *Apiastrum.*
            Seed-face flat. 20. *Ammoselinum.*
          Carpels terete, or slightly flattened laterally. 38. *Spermolepis.*
        Fruit with 4 strong bristly wings.
          Fruit dorsally flattened; calyx-teeth obsolete. 1. *Daucus.*
          Fruit laterally flattened; calyx-teeth prominent. 2. *Caucalis.*
    Fruit smooth, ribbed or winged, rarely pubescent.
      Fruit winged, at least on the lateral ribs, dorsally flattened.
        Plants acaulescent, or nearly so; leaves bipinnate or dissected. 10. *Peucedanum.*
        Plants tall, leafy-stemmed.
          Leaves simply ternate or pinnate.
            Leaf-segments ovate-lanceolate to oblong. 5. *Oxypolis.*
            Leaf-segments very broad. 8. *Imperatoria.*
          Leaves ternately or pinnately compound; segments broad.
            Segments ovate or oval, not cordate. 3. *Angelica.*
            Segments large, cordate, pubescent. 6. *Heracleum.*
          Leaves 2-3-pinnately decompound; segments narrow. 4. *Conioselinum.*

* Text prepared with the assistance of Dr. J. N. ROSE.

Fruit winged or wingless, not flattened either dorsally or laterally.
- All its ribs winged — 11. *Cymopterus.*
- Ribs distinct, but not winged.
  - Leaves finely dissected; segments narrow. — 14. *Æthusa.*
  - Leaf-segments broad.
    - Fruit with numerous oil-tubes between the ribs. — 13. *Ligusticum.*
    - Fruit with solitary oil-tubes between the ribs. — 15. *Coelopleurum.*
  - Leaves entire, or with a few narrow segments. — 17. *Cynosciadium.*

Fruit laterally flattened.
- Fruit linear or linear-oblong.
  - Leaves 3-foliolate, — 37. *Deringa.*
  - Leaves decompound or finely dissected.
    - Fruit long-beaked, smooth, ribless. — 26. *Anthriscus.*
    - Fruit short-beaked or beakless, ribbed. — 28. *Chaerophyllum.*
- Fruit ovoid or oval.
  - Umbels opposite the leaves. — 33. *Apium.*
  - Umbels terminal or axillary.
    - Leaves finely dissected into filiform segments.
      - Ribs of the fruit equal, prominent. — 39. *Ptilimnium.*
      - Lateral ribs much thickened. — 33. *Apium.*
      - Ribs filiform, inconspicuous. — 35. *Carum.*
    - Leaves pinnate or decompound; segments linear to ovate-oblong.
      - Plants acaulescent, or nearly so.
        - Calyx-teeth obsolete; fruit nearly orbicular. — 44. *Erigenia.*
        - Calyx-teeth prominent; fruit oblong. — 24. *Musineon.*
      - Plants leafy-stemmed.
        - Oil-tubes of the fruit none.
          - Leaves biternate with broad segments. — 41. *Ægopodium.*
          - Leaves decompound into small pinnatifid segments. — 31. *Conium.*
        - Oil-tubes solitary between the ribs; leaves pinnate. — 36. *Cicuta.*
        - Oil-tubes numerous.
          - Leaves pinnately compound; segments linear. — 25. *Enlophus.*
          - Leaves pinnate; the segments sometimes pinnatifid.
            - Tall native marsh perennials.
              - Oil-tubes 1–3 in the intervals between the prominent ribs. — 32. *Sium.*
              - Oil-tubes numerous and close together along inner side of the pericarp; ribs filiform. — 40. *Berula.*
            - Introduced plant of dry ground. — 22. *Pimpinella.*

Flowers yellow or purple.
- Fruit dorsally flattened.
  - Plants acaulescent; leaves finely dissected. — 10. *Peucedanum.*
  - Plants leafy-stemmed.
    - Leaves pinnate; segments ovate; fruit with thin lateral wings. — 7. *Pastinaca.*
    - Leaves pinnately compound; fruit-wings thick and corky. — 9. *Polytaenia.*
- Fruit not flattened; ribs or some of them winged. — 12. *Thaspium.*
- Fruit laterally flattened; leaves decompound (except in *Zizia*).
  - Leaf-segments oval or ovate, entire. — 22. *Pimpinella.*
  - Leaf-segments crenate, lobed or incised.
    - Leaf-segments broad, crenate or dentate. — 34. *Zizia.*
    - Leaf-segments deeply incised.
      - Plant native, western; ribs of the fruit filiform. — 24. *Musineon.*
      - Plant sparingly escaped from cultivation; ribs prominent. — 33. *Apium.*
    - Leaf-segments filiform; fruit prominently ribbed. — 21. *Foeniculum.*

1. DAÙCUS L. Sp. Pl. 242. 1753.

Biennial or annual, mostly hispid-pubescent herbs, with pinnately decompound finely divided leaves, and compound umbels of white or reddish flowers. Involucre of several foliaceous pinnately parted bracts in our species. Involucels of numerous entire or toothed bracts. Calyx-teeth obsolete. Petals obovate, the apex inflexed, those of the outer flowers often dilated and 2-lobed. Stylopodium depressed or none. Umbels very concave in fruit. Fruit oblong, somewhat flattened dorsally. Primary ribs 5, slender. Secondary ribs 4, winged, each bearing a row of barbed prickles. Oil-tubes solitary under the secondary ribs, and 2 on the commissural side of each carpel. [The ancient Greek name.]

About 25 species, of wide geographic distribution. Besides the following, another occurs in the southwestern United States.

1. Daucus Caròta L. Wild Carrot. (Fig. 2632.)

Daucus Carota L. Sp. Pl. 242. 1753.

Hispid, usually biennial, erect, 1°–3° high, the root fleshy, deep, conic. Lower and basal leaves 2–3-pinnate, the segments linear or lanceolate, dentate, lobed or pinnatifid; upper leaves smaller, less divided; bracts of the involucre parted into linear or filiform lobes; umbels 2′–4′ broad; rays numerous, crowded, ½′–2′ long, the inner ones shorter than the outer; pedicels very slender, 1″–2″ long in fruit; flowers white, the central one of each umbel often purple, that of each umbellet occasionally so, all rarely pinkish; fruit 1½″–2″ long, bristly on the winged ribs.

In fields and waste places, very common throughout our area, often a pernicious weed. Naturalized from Europe, and native also of Asia. The original of the cultivated Carrot. Called also Bird's- or Crow's-nest and Queen Anne's Lace. June–Sept.

2. CAÙCALIS L. Sp. Pl. 240. 1753.

Annual, hispid or pubescent herbs, with pinnately decompound leaves, and compound umbels of white or reddish flowers. Calyx-teeth prominent, acute. Bracts of the involucre few and small or none. Involucels of several or numerous narrow bracts. Petals cuneate or obovate with an inflexed point, mostly 2-lobed. Stylopodium thick, conic. Fruit ovoid or oblong, laterally flattened. Primary ribs 5, filiform. Secondary ribs 4, winged, each bearing a row of barbed or hooked bristles or tubercles. Oil-tubes solitary under the secondary ribs, 2 on the commissural side. [The Greek name.]

About 20 species, natives of the northern hemisphere. Besides the following introduced ones, a native species occurs in western North America.

Umbels sessile or short-stalked, capitate, opposite the leaves. 1. *C. nodosa.*
Umbels compound, peduncled; rays slender. 2. *C. Anthriscus.*

1. Caucalis nodòsa (L.) Huds. Knotted Hedge-Parsley. (Fig. 2633.)

Tordylium nodosum L. Sp. Pl. 240. 1753.

Caucalis nodosa Huds. Fl. Angl. Ed. 2, 114. 1778.

Torilis nodosa Gaertn. Fruct. & Sem. 1: 82. *pl. 20. f. 6.* 1788.

Decumbent and spreading, branched at the base, the branches 6′–12′ long. Leaves bipinnate, the segments linear-oblong, acute, entire or dentate; umbels sessile, or short-stalked, forming small capitate clusters opposite the leaves at the nodes; rays 1–3, very short; fruit sessile, ovoid, about 1½″ long, the outer with barbed prickles on the secondary ribs, the inner with tubercles.

In waste places and on ballast, Philadelphia, Maryland and Iowa. Also in the southern States, California, the West Indies, and South America. Adventive from Europe. May–Aug.

2. Caucalis Anthriscus (L.) Huds. Erect Hedge-Parsley. (Fig. 2634.)

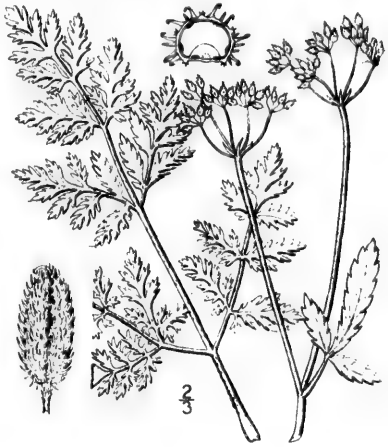
Tordylium Anthriscus L. Sp. Pl. 240. 1753.

Caucalis Anthriscus Huds. Fl. Angl. Ed. 2, 114. 1778.

Torilis Anthriscus Gmel. Fl. Bad. 1: 615. 1806.

Erect, rather slender, 2°–3° high. Leaves bipinnate, or the uppermost simply pinnate, the segments lanceolate, obtuse, dentate or pinnatifid; umbels slender-peduncled, 1′–2′ long; pedicels 1″–2″ long in fruit; rays 3–8, slender, about ½′ long; fruit ovoid-oblong densely bristly on the secondary ribs, 1½″–2″ long.

In waste places, New Jersey to the District of Columbia, western New York and Ohio. Adventive from Europe. Called also Rough- or Hemlock-Chervil, Scabby Head, Rough-Cicely. July–Sept.



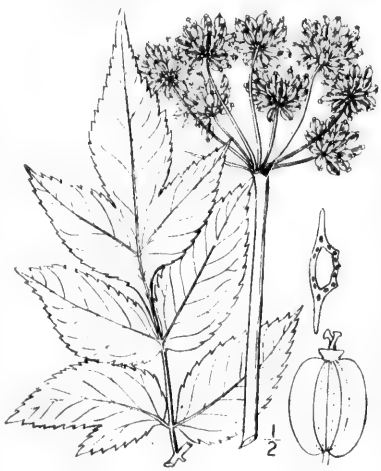
3. ANGÉLICA L. Sp. Pl. 250. 1753.

[ARCHANGELICA Hoffm. Gen. Umb. 166. 1814.]

Tall erect perennial branching herbs, with compound leaves and large umbels of white flowers (in our species). Involucre none, or of a few small bracts. Involucels of several small bracts, or sometimes wanting. Calyx-teeth obsolete or small. Petals with an inflexed tip. Stylopodium depressed. Fruit ovate or oval, dorsally compressed, pubescent or glabrous. Dorsal and intermediate ribs prominent, approximate, the lateral ones broadly winged. Oil-tubes solitary or several in the intervals, 2–10 on the commissural side. Seed-face flat or somewhat concave. [Named for its supposed healing virtues.]

About 30 species, natives of the northern hemisphere and New Zealand. Besides the following, some 13 others occur in the southern and western parts of North America.

Umbels glabrous, or nearly so; leaf-segments acute or acutish.
Oil-tubes 1 (rarely 2–3) in the intervals; wings broader than the carpels. 1. *A. Curtisii.*
Oil-tubes numerous and contiguous; wings narrower than the carpels. 2. *A. atropurpurea.*
Umbels densely tomentose; leaf-segments obtuse. 3. *A. villosa.*

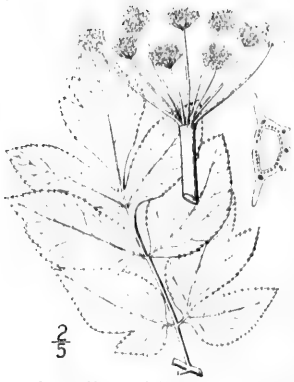


1. Angelica Curtísii Buckl. Curtis' Angelica. (Fig. 2635.)

Angelica Curtisii Buckl. Am. Journ. Sci. **45**: 173. 1843.

Glabrous, or the umbels and upper part of the stem slightly pubescent, 2°–3½° high. Leaves biternate, the divisions pinnate, the lower long-stalked, the upper mostly reduced to inflated petioles; segments rather thin, sometimes slightly pubescent on the veins beneath, ovate, acute or acuminate, sharply and irregularly dentate or incised, 2′–4′ long; umbels 3′–6′ broad, 9–25-rayed; rays rather stout, 1½′–3′ long; pedicels slender, 4″–6″ long; fruit oval, glabrous, 2″–3″ long, emarginate at the base, the lateral wings broader than the carpel; oil-tubes commonly solitary in the intervals.

In woods, central Pennsylvania, south along the Alleghanies to North Carolina, where it ascends to 6400 ft. Aug.–Sept.



2. Angelica atropurpùrea L. Great or Purple-stemmed Angelica. (Fig. 2636.)

Angelica atropurpurea L. Sp. Pl. 251. 1753.
Angelica triquinata Michx. Fl. Bor. Am. 1: 167. 1803.
Archangelica atropurpurea Hoffm. Umbel. 161. 1814.

Stout, 4°–6° high, glabrous throughout, or the umbel slightly rough-hairy. Lower leaves often 2° wide, biternate and the divisions pinnate, the upper ones smaller, all with very broad dilated petioles; segments oval or ovate, acute or acutish, rather thin, sharply serrate and often incised, 1½′–2′ long; umbels sometimes 10′ broad, 9–25-rayed, the rays 2′–4′ long; pedicels very slender, 4″–8″ long; fruit broadly oval, 3″–4″ long, slightly emarginate at the base, the lateral wings narrower than the carpels; oil-tubes numerous and contiguous.

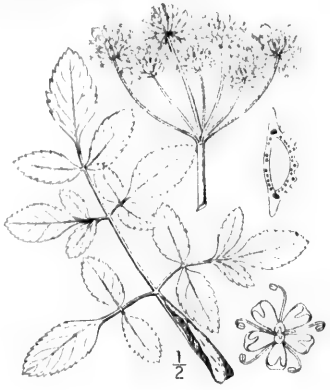
In swamps and moist ground, Labrador to Minnesota, south to Delaware and Illinois. June–July.

3. Angelica villòsa (Walt.) B.S.P. Pubescent Angelica. (Fig. 2637.)

Ferula villosa Walt. Fl. Car. 115. 1788.
Angelica hirsuta Muhl. Cat. Ed. 2, 30. 1818.
Angelica villosa B.S.P. Prel. Cat. N. Y. 22. 1888.

Rather slender, 2°–6° high, the umbels and upper part of the stem densely tomentose-canescent. Lower leaves ternate or biternate, often 1° long, the divisions pinnate, the segments thick, oval, equally and rather finely dentate, obtuse or obtusish, 1′–2′ long, upper leaves mostly reduced to sheathing petioles; umbels 2′–4′ broad, 7–30-rayed; rays slender, 1′–1½′ long; pedicels about 2″ long; fruit broadly oval, emarginate at the base, 3″ long, finely pubescent; lateral wings about as broad as the carpels; oil-tubes generally 3–6 in the intervals.

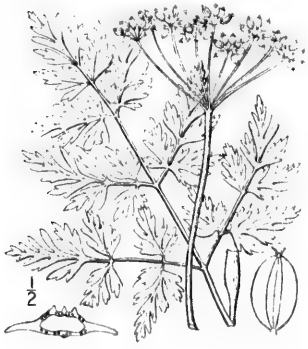
In dry soil, Connecticut to Florida, Minnesota and Tennessee. Ascends to 3200 ft. in Virginia. July–Aug.



4. CONIOSELÌNUM Hoffm. Umb. Add. 28. 1814.

Erect perennial glabrous branching herbs, with pinnately decompound leaves, and compound umbels of white flowers. Involucre none, or of a few short bracts. Involucels of several narrowly linear bracts. Calyx-teeth obsolete. Petals with an infolded tip. Stylopodium depressed-conic. Fruit oval or oblong, dorsally flattened. Carpels with prominent approximate dorsal and intermediate ribs, the lateral ones broadly winged and conspicuous. Oil-tubes mostly 2–3 in the intervals, and 4–8 on the commissural side. Seed-face slightly concave, its back strongly convex. [Greek, hemlock-parsley.]

Besides the following, some 3 others occur in western North America.



1. Conioselinum Chinénse (L.) B.S.P. Hemlock-Parsley. (Fig. 2638.)

Athamanta Chinensis L. Sp. Pl. 245. 1753.
Selinum Canadense Michx. Fl. Bor. Am. 1: 165. 1803.
Conioselinum (?) *Canadense* T. & G. Fl. N. A. 1: 619. 1840.
Conioselinum Chinense B.S.P. Prel. Cat. N. Y. 22. 1888.

Stem terete, striate, 2°–5° high. Lower leaves long-petioled, the upper nearly sessile, all decompound into linear-oblong acutish segments; petioles sheathing; umbels terminal and axillary, 2′–3′ broad, 9–16-rayed; rays rather slender, 1½′–2½′ long; pedicels very slender, 2″–3″ long; fruit prominently ribbed, broadly oval, about 2″ long.

In cold swamps, Labrador to southern New York, south in the mountains to North Carolina, west to Ontario, Minnesota and Indiana. Ascends to 5000 ft. in North Carolina. Aug.–Sept.

5. OXÝPOLIS Raf. Neogen. 2. 1825.

[TIEDEMANNIA DC. Mem. Omb. 51. 1829.]
[ARCHEMORA DC. Mem. Omb. 52. 1829.]

Erect perennial glabrous marsh herbs, from clustered tuberous roots, with pinnate or ternate leaves, or in one species the leaves reduced to hollow jointed phyllodia, and compound umbels of white flowers. Involucre none, or of a few linear bracts. Involucels of several small bracts, or none. Calyx-teeth acute. Stylopodium thick, conic. Fruit glabrous, dorsally compressed, oval or obovate; dorsal and intermediate ribs slender, the lateral ones winged, strongly nerved along the inner margin of the wing, the carpels appearing as if equally 5-ribbed. Oil-tubes solitary in the intervals, 2–6 on the commissural side. Seed-face nearly flat.

Four known species, natives of North America.

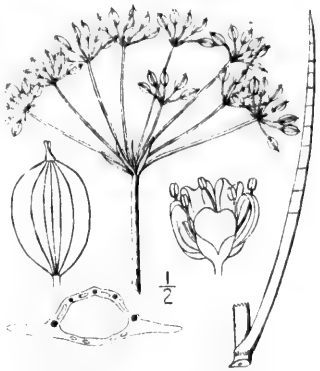
Leaves all reduced to hollow usually jointed phyllodia. 1. *O. filiformis.*
Leaves pinnate; leaflets linear or lanceolate. 2. *O. rigida.*

1. Oxypolis filifórmis (Walt.) Britton. Oxypolis. (Fig. 2639.)

Œnanthe filiformis Walt. Fl. Car. 113. 1788.
Œnanthe teretifolia Muhl. Cat. 31. 1813.
Tiedemannia teretifolia DC. Mem. Omb. 51. *pl. 12.* 1829.
Oxypolis filiformis Britton, Mem. Torr. Club, 5: 239. 1894.

Stem hollow, 2°–6° high. Leaves reduced to linear hollow usually jointed acute phyllodia 1′–18′ long; involucre of several linear-subulate bracts; umbels 2′–4′ broad, 6–15-rayed; rays slender, ½′–2′ long; pedicels 2″–4″ long; fruit oval, or slightly obovate, 2″–3″ long; oil-tubes large, 1 in each interval, 2–4 on the commissural side.

In ponds and swamps, southern Virginia to Florida, west to Louisiana. Aug.–Sept. Plants collected in Delaware, referred to this species, differ in having broadly oval corky-winged fruit, an inconspicuous disk, slender conic stylopodium and smaller oil-tubes. They may represent a different genus.



2. Oxypolis rígidus (L.) Britton. Cowbane. Hemlock, or Water Dropwort. (Fig. 2640.)

Sium rigidum L. Sp. Pl. 251. 1753.
Archemora rigida DC. Mem. Omb. 52. 1829.
T. rigida Coult. & Rose, Bot. Gaz. 12: 74. 1887.
O. rigidus Britton, Mem. Torr. Club, 5: 239. 1894.

Rather slender, 2°–6° high. Leaves petioled, simply pinnate, the lower often 1° long or more, the uppermost much reduced; leaflets thick, ovate-lanceolate, lanceolate or oblong, entire, or remotely dentate, 1½′–3′ long, 3″–12″ wide; involucre of 1–4 bracts, or none; umbels 2′–4′ broad, 7–25-rayed; rays slender, 1′–4′ long; pedicels 2″–9″ long; fruit oval, 2½″–3″ long, 1½″–2″ broad; oil-tubes small, 1 in each interval, 4–6 on the commissural side.

In swamps, New York to Florida, west to Wisconsin, Minnesota, Missouri and Louisiana. Very variable in leaf-form and size of fruit. Aug.–Sept.

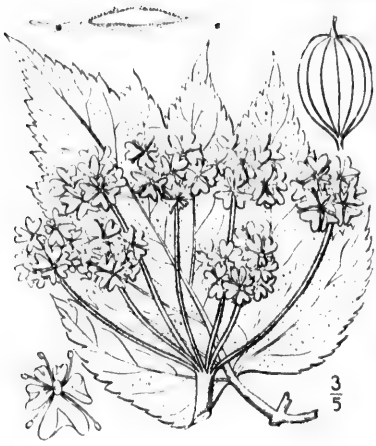
Oxypolis rigidus longifólius (Pursh) Britton, Mem. Torr. Club, 5: 239. 1894.
Sium longifolium Pursh, Fl. Am. Sept. 194. 1814.
Œnanthe ambigua Nutt. Gen. 1: 189. 1818.

Leaflets elongated-linear, entire, 1″–1½″ wide; fruit smaller. New Jersey to South Carolina and Tennessee.

6. HERACLÈUM L. Sp. Pl. 249. 1753.

Erect, usually pubescent perennial herbs, with ternately compound leaves, and compound umbels of white flowers. Bracts of the involucre few and deciduous, or none. Involucels of numerous linear bracts. Calyx-teeth obsolete or small. Petals cuneate, or clawed, those of the outer flowers dilated and obcordate or 2-lobed. Stylopodium thick, conic. Fruit much flattened dorsally, broadly oval, obovate, or orbicular; dorsal and intermediate ribs filiform, the lateral ones broadly winged and the wings nerved near the outer margin; oil-tubes extending only to about the middle of the carpels, conspicuous, 1 in each interval, 2–4 on the commissural side. [Greek, to Hercules.]

About 60 species, natives of the northern hemisphere, only the following in North America.



1. Heracleum lanàtum Michx. Cow-Parsnip. (Fig. 2641.)

Heracleum lanatum Michx. Fl. Bor. Am. 1: 166. 1803.

Very stout, tomentose-pubescent, 4°-8° high, the stem ridged, often 2′ thick at the base. Leaves petioled, ternately divided, very pubescent beneath, the segments broadly ovate, or orbicular, cordate, stalked, lobed and sharply serrate, rather thin, 3′-6′ broad; petioles much inflated; umbels 6′-12′ broad, 8-30-rayed, the rays stout, 2′-4′ long; pedicels 3″-9″ long in fruit; fruit broadly oval, or obovate, 4″-6″ long, 3″-4½″ broad, finely pubescent, emarginate at the summit.

In moist ground, Labrador and Newfoundland to Alaska, south to North Carolina, Missouri, Utah and California. Called also Master-wort. June-July.

7. PASTINÀCA L. Sp. Pl. 262. 1753.

Tall erect mostly biennial branching herbs, with thick roots, pinnate leaves, and compound umbels of yellow flowers. Involucre and involucels commonly none. Calyx-teeth obsolete. Stylopodium depressed. Fruit oval, glabrous, much flattened dorsally; dorsal and intermediate ribs filiform, the lateral winged, those of the two carpels contiguous and forming a broad margin to the fruit; oil-tubes solitary in the intervals and 2-4 on the commissural side. Seed very flat. [Latin *pastus*, food.]

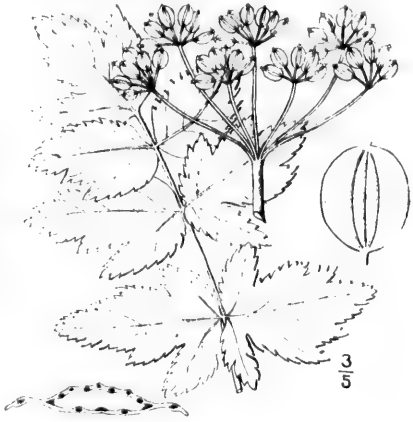
About 7 species, natives of Europe and Asia.

1. Pastinaca sativa L. Wild Parsnip. Madnep. Tank. (Fig. 2642.)

Pastinaca sativa L. Sp. Pl. 262. 1753.
Peucedanum sativum S. Wats. Bot. King's Exp. 128. 1871.

Biennial or rarely annual, glabrous, or somewhat downy-pubescent, 2°-5° high, the root long, conic, fleshy. Lower and basal leaves petioled, pinnate, often 1½° long, the segments rather thin, ovate or oval, obtuse, sessile, lobed or incised and sharply dentate, 1′-3′ long; upper leaves generally much reduced; umbels several or numerous, 2′-6′ broad, 7-15-rayed, the rays slender, ½′-2′ long; pedicels very slender, 3″-6″ long in fruit; fruit broadly oval, 2½″-3½″ long, 2″-3″ broad, the dorsal and intermediate ribs not prominent but the oil-tubes conspicuous.

Roadsides and waste places, a very common weed in nearly all parts of our area. Naturalized from Europe. June-Sept.



8. IMPERATÒRIA L. Sp. Pl. 259. 1753.

Tall perennial herbs, with large ternately divided or 2-pinnate leaves, sheathing petioles, and compound umbels of white flowers. Calyx-teeth obsolete. Petals ovate, mostly emarginate. Fruit much flattened dorsally, broadly oval, to nearly orbicular, the lateral ribs broadly winged all around, the intermediate and dorsal ribs slender, wingless; oil-tubes solitary in the intervals and 2 on the commissural side. Styles and stylopodium short. Seed-face flat. [Named for its supposed forceful medicinal properties.]

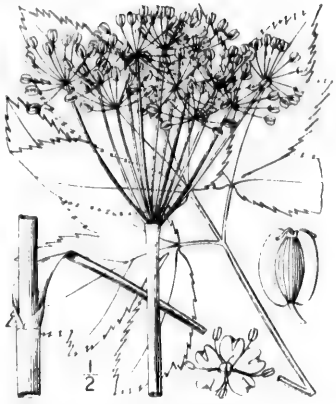
About 10 species, natives of the Old World.

1. Imperatoria Ostrùthium L. Masterwort. Felon-grass. Pellitory of Spain. (Fig. 2643.)

Imperatoria Ostruthium L. Sp. Pl. 259. 1753.

Glabrous, or sparingly pubescent; stem stout, hollow, erect, 2°–5° tall. Leaves ternately divided into very broad stalked segments which are often 3-parted nearly or quite to the base, sharply and unequally serrate and often incised, the segments of the long-petioled lower leaves often 5′ broad; rays of the umbels and pedicels very numerous, slender; involucre none, or of 1 or 2 lanceolate bracts; involucel-bracts few, narrow, deciduous; fruit broadly oval, about 2″ long.

In fields, Pocono plateau of Pennsylvania and Michigan. Reported from Newfoundland. Naturalized or adventive from Europe. Called also Broad-leaved Hog's Fennel. May–July.



9. POLYTAÈNIA DC. Mem. Omb. 53. *pl. 13.* 1829.

Perennial, nearly glabrous herbs, with pinnately decompound leaves, and compound umbels of yellow flowers. Involucre none, or rarely of 1–2 linear bracts. Involucels of a few subulate deciduous bracts. Calyx-teeth prominent, triangular. Petals obovate-cuneate, with a long incurved tip. Stylopodium none. Fruit oval or obovate, much flattened dorsally, thick and corky; dorsal and intermediate ribs obscure, the lateral ones with thick wings which form a broad margin to the fruit, and are nerved toward the outer margin; oil-tubes 12–18, contiguous, with numerous smaller ones irregularly disposed in the thick pericarp. Seed flat. [Greek, many-fillets, or oil-tubes.]

A monotypic genus of central North America.

1. Polytaenia Nuttàllii DC. Polytaenia. (Fig. 2644.)

Polytaenia Nuttallii DC. Mem. Omb. 53. *pl. 13.* 1829.

Stem slightly scabrous, leafy, 1°–3° high; roots fusiform. Leaves petioled, or the uppermost smaller and sessile, pinnate, the segments deeply pinnatifid or parted, 1′–3′ long, the lobes ovate, oblong or obovate, dentate or entire; umbels 6–12-rayed, 1′–2½′ broad; rays scabrous, ½′–2½′ long; pedicels finely pubescent, 1″–2″ long; fruit glabrous, 3″–5″ long, 2½″–3½″ broad, ½″ thick, the margins obtuse, the central part of both carpels depressed when dry.

Dry soil, Michigan and Wisconsin to Tennessee, Texas and Louisiana. April–May.

10. PEUCÉDANUM L. Sp. Pl. 245. 1753.

Perennial herbs, acaulescent or nearly so, from thick fusiform or tuberous roots, with ternate, pinnate, or in our species bipinnate or finely dissected leaves, and compound umbels of white or yellow flowers. Involucre none. Involucels of several or numerous bracts. Calyx-teeth mostly obsolete. Stylopodium depressed or none. Fruit oval, oblong or orbicular, glabrous or pubescent, dorsally compressed. Carpels with filiform dorsal and intermediate ribs, the lateral ones broadly winged; oil-tubes 1–4 (rarely more) in the intervals, 2–10 on the commissural side. Seed-face flat or slightly concave. [Name Greek.]

About 125 species, of wide geographic distribution. In addition to the following, about 47 others occur in western North America.

Flowers white or pinkish. — 1. *P. nudicaule.*
Flowers yellow.
  Fruit glabrous; involucel-bracts united.
    Plant pubescent. — 2. *P. foeniculaceum.*
    Plant glabrous. — 3. *P. Kingii.*
  Fruit finely pubescent; involucel-bracts linear, distinct. — 4. *P. villosum.*

1. Peucedanum nudicaùle (Pursh) Nutt. White-flowered Parsley. (Fig. 2645.)

Smyrnium nudicaule Pursh, Fl. Am. Sept. 196. 1814.
Peucedanum nudicaule Nutt.; T. & G. Fl. N. A. 1: 627. 1840.

Finely pubescent, or nearly glabrous, the leaves and peduncles 3′–8′ high. Root elongated, often swollen in places. Leaves bipinnate, the segments oblong or ovate, generally pinnatifid into linear or linear-oblong obtusish lobes; bracts of the involucels lanceolate, scarious-margined; umbel 4–8-rayed, the rays unequal, ½′–1½′ long in fruit; pedicels 1″–3″ long; flowers white or pinkish; fruit broadly oval or orbicular, glabrous, 2″–3″ long, the lateral wings narrower than the carpel, the dorsal and intermediate ones inconspicuous; oil-tubes generally solitary in the intervals.

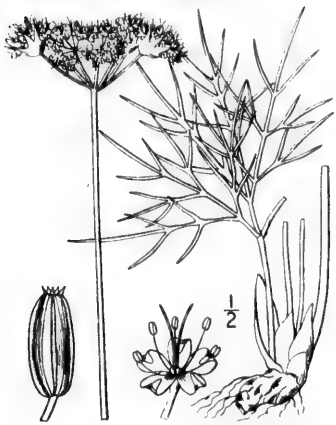
In dry soil, Manitoba to Minnesota and Kansas, west to the Northwest Territory and New Mexico. March–May.

2. Peucedanum foeniculàceum Nutt. Fennel-leaved Parsley. (Fig. 2646.)

Ferula foeniculacea Nutt. Gen. 1: 183. 1818.
Peucedanum foeniculaceum Nutt.; T. & G. Fl. N. A. 1: 627. 1840.

Tomentose-pubescent, or nearly glabrous; peduncles 4′–10′ high, usually exceeding the leaves. Roots stout and deep; leaves very finely dissected into short, linear or filiform acute lobes and segments, the primary divisions ternate or pinnate; petioles strongly sheathing at the base; umbels unequally 3–12-rayed, the rays ½′–1½′ long; bractlets of the involucels tomentose, united for more than half their length, withering; flowers yellow; pedicels 2″–4″ long in fruit; fruit broadly oval, glabrous, about 3″ long, the lateral wings narrower than the carpel, dorsal and intermediate ones rather prominent; oil-tubes 1–3 in the intervals.

Prairies, Northwest Territory to Kansas, Missouri and Texas. March–April.



3. Peucedanum Kingii S. Wats. King's Parsley. (Fig. 2647.)

Peucedanum graveolens S. Wats. Bot. King's Exp. 128. 1871. Not *Anethum graveolens* L.
Peucedanum Kingii S. Wats. Proc. Am. Acad. 22: 474. 1887.

Glabrous, acaulescent, scape striate, 6′–20′ high, as long as the leaves or somewhat longer. Leaves all basal, long-petioled, pinnately or 2-pinnately divided into narrowly linear segments ½″ wide or less; umbel unequally 4–20-rayed; rays ½′–1½′ long; involucels of several lanceolate partly united bracts; flowers yellow; calyx-teeth short; fruit oblong, glabrous, 4″–6″ long, nearly 2″ wide, the carpels with narrow lateral wings, the dorsal and intermediate ribs also somewhat winged; oil-tubes 3–6 in the intervals, and 6–10 on the commissural side.

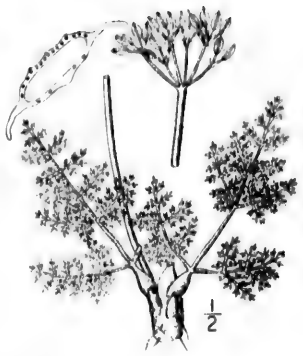
Western Nebraska to Utah. June–Aug. Perhaps not properly referred to this genus.

4. Peucedanum villòsum Nutt. Hairy Parsley. (Fig. 2648.)

Peucedanum villosum Nutt.; S. Wats. Bot. King's Exp. 131. 1871.

Tomentose-pubescent; peduncles 3′–8′ long, exceeding the leaves. Roots long and deep; leaves very finely dissected into narrowly oblong obtuse lobes and segments, the primary divisions mostly ternate; umbel 4–10-rayed, the rays 4″–10″ long in fruit; bracts of the involucels lanceolate, tomentose, or finely pubescent, separate or nearly so; flowers yellow; fruit oval, finely pubescent, 3″–3½″ long, about 2½″ broad, the lateral wings narrower than the carpel, the dorsal and intermediate ribs prominent; oil-tubes 3–4 in the intervals.

Prairies and dry soil, Nebraska to the Northwest Territory, west to New Mexico and California. April–May.



11. CYMÓPTERUS Raf. Journ. Phys. 89: 100. 1819.

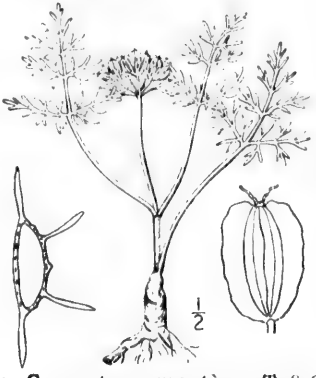
Perennial subscapose glabrous herbs, from thick roots, with pinnately decompound leaves, and white flowers (in our species) in peduncled umbels. Involucre of several bracts or none. Involucels of 1 to numerous bracts. Calyx-teeth rather prominent. Petals inflexed at the apex. Stylopodium depressed or wanting. Fruit globose, ovoid or ellipsoid, flattened laterally or not at all. Carpels dorsally flattened, with 3–5 flat equal wings; oil-tubes several or solitary in the intervals. [Greek, wave-winged, referring to the fruit.]

About 13 species, natives of western and central North America.

Involucre none. 1. *C. acaulis.*
Involucre prominent. 2. *C. montanus.*

1. Cymopterus acaùlis (Pursh) Rydberg. Plains Cymopterus. (Fig. 2649.)

Selinum acaule Pursh, Fl. Am. Sept. 732. 1814.
Cymopterus glomeratus Raf. Journ. Phys. 89: 100. 1819.
Cymopterus acaulis Rydberg, Bot. Surv. Neb. 3: 38. 1894.



Low, the stem seldom over 1′ high. Leaves erect or ascending, bright green, 3′–8′ long, slender-petioled, pinnate or bipinnate into linear-oblong obtuse entire or lobed segments; umbels slender-peduncled, capitate, 1′ or less broad, several rayed; rays 1″–2½″ long; pedicels very short; involucre none; involucel of a single palmately-lobed bractlet; fruit broadly oval, about 3″ in diameter when mature; oil-tubes 4–5 in the intervals; seed face nearly flat.

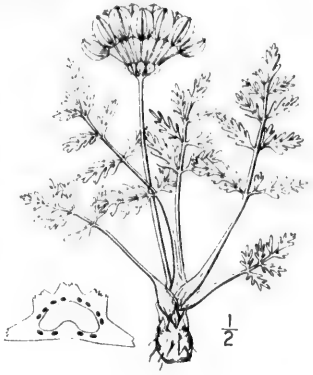
In dry soil, Minnesota and Wisconsin to Arkansas, west to the Northwest Territory, British Columbia and Colorado. April–May.

2. Cymopterus montànus T. & G. Mountain Cymopterus. (Fig. 2650.)

Cymopterus montanus T. & G. Fl. N. A. 1: 624. 1840.

Similar to the preceding species but somewhat glaucous, or very slightly pubescent. Leaves 1′–6′ high, stout-petioled, pinnate, or bipinnate, the segments oblong, obtuse, entire, toothed, or lobed; peduncles stout, 1′–6′ high; involucre and involucels of broad membraneous somewhat united veined bracts; umbels 1′–2′ broad in fruit; rays several, 3″–9″ long; pedicels 1″–2″ long; fruit ellipsoid, 3″–6″ long, the carpels broadly 3–5 winged; oil-tubes 1–3 in the intervals.

Dry soil, western Nebraska and Wyoming to Texas. March–April.

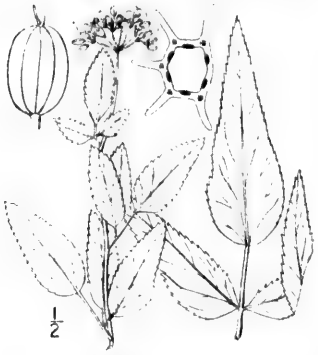


12. THÁSPIUM Nutt. Gen. 1: 196. 1818.

Perennial herbs, with ternate or ternately compound leaves, or the basal ones sometimes undivided, and compound umbels of yellow or purple flowers. Involucre none, or of 1–3 bracts. Involucels of several small bracts. Calyx-teeth prominent, acute. Stylopodium none. Style slender. Fruit ovoid or oblong, glabrous or nearly so, scarcely flattened. Carpels somewhat dorsally flattened, the ribs or at least some of them strongly winged; oil-tubes solitary in the intervals. Seed-face flat. [Name from the island Thapsus.]

About 3 species, natives of eastern North America.

Leaves mostly ternate; segments crenate, thickish. 1. *T. trifoliatum.*
Leaves mostly biternate; segments incised or lobed, rather thin.
  Segments ovate, incised. 2. *T. barbinode.*
  Segments pinnatifid into oblong lobes. 3. *T. pinnatifidum.*



1. Thaspium trifoliàtum (L.) Britton. Purple Meadow-Parsnip. (Fig. 2651.)

Thapsia trifoliata L. Sp. Pl. 262. 1753.
Smyrnium atropurpureum Desr. in Lam. Encycl. 3: 667. 1789.
Thaspium atropurpureum Nutt. Gen. 1: 196. 1818.
T. trifoliatum Britton, Mem. Torr. Club, 5: 240. 1894.

Glabrous throughout; stems erect, more or less branched, 1°–2° high. Upper stem-leaves short-petioled, ternate, or rarely biternate, the segments ovate or ovate-lanceolate, 1′–2′ long, crenate-dentate all around; basal leaves long-petioled, sometimes undivided; umbels 1′–2′ broad; petals dark purple; fruit nearly 2″ long, all the ribs usually winged.

In woods, Rhode Island to New Jersey, Tennessee and Illinois. Purple Alexanders. June–July.

Thaspium trifoliàtum aùreum (Nutt.) Britton, Mem. Torr. Club, 5: 240. 1894.
Thaspium aureum Nutt. Gen. 1: 196. 1818.

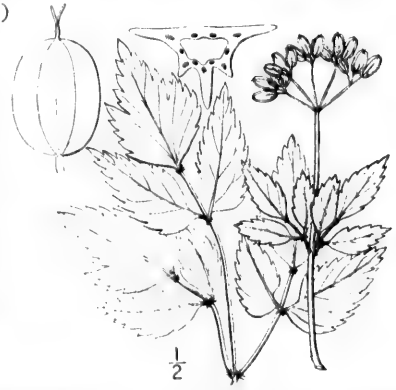
Flowers yellow. Range of the type. Golden Alexanders.

2. Thaspium barbinòde (Michx.) Nutt. Hairy-jointed Meadow-Parsnip. (Fig. 2652.)

Smyrnium barbinode Michx. Fl. Bor. Am. 1: 167. 1803.
Thaspium barbinode Nutt. Gen. 1: 196. 1818.

Erect, divergently branched, 2°–4° high, pubescent at the joints and sometimes also on the young shoots and rays of the umbels. Leaves more or less petioled, mostly bipinnate (the upper often simply pinnate and the basal 3-pinnate); segments ovate, acute at both ends, or rounded at the base, rather thin, incised-serrate or cleft, 1′–2′ long; umbels 1′–2′ broad; flowers light yellow; fruit nearly 3″ long, usually glabrous, 7 of the ribs commonly broadly winged.

Along streams, Ontario to Minnesota, south to Florida, Kentucky and Arkansas. Ascends to 4200 ft. in North Carolina. May–June.



T. barbinòde angustifòlium Coult. & Rose, Bot. Gaz. 12: 137. 1887.

Leaf-segments more sharply cleft into narrower lobes; fruit puberulent. Pennsylvania to West Virginia and Illinois.

3. Thaspium pinnatifidum (Buckl.) A. Gray. Cut-leaved Meadow-Parsnip. (Fig. 2653.)

Zizia pinnatifida Buckl. Am. Journ. Sci. 45: 175. 1843.
Thaspium Walteri Shuttlw.; A. Gray, Pl. Wright. 1: 79. 1850.
Thaspium pinnatifidum A. Gray, Man. Ed. 2, 155. 1856.

Divergently branched, 2°–4° high, more pubescent than the preceding species. Leaves distant, ternately pinnatifid into numerous oblong or linear-oblong lobes, the basal ones long-petioled and very large; flowers light yellow; fruit 1½″–2½″ long, puberulent, all the ribs winged, but 7 of the wings broader than the other 3.

In woods and copses, Kentucky to North Carolina and Tennessee. June.

13. LIGUSTICUM L. Sp. Pl. 250. 1753.

Perennial glabrous usually branching herbs, with aromatic roots, ternately compound leaves, and large compound umbels of white flowers. Involucre of several narrow mostly deciduous bracts. Involucels of numerous linear bracts. Calyx-teeth obsolete. Stylopodium conic. Fruit oblong or ovoid, scarcely flattened. Carpels dorsally compressed, the ribs prominent, acute, separated by broad intervals; oil-tubes 2–6 in the intervals. Seed-face flat or slightly concave. [Named from Liguria, where Lovage abounds.]

About 20 species, natives of the northern hemisphere. Besides the following, some 7 others occur in western North America.

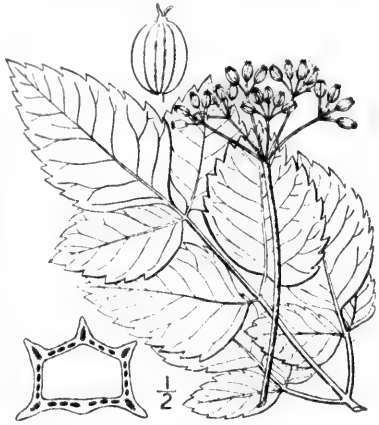
Leaves thin; fruit ovoid; southern species. 1. *L. Canadense.*
Leaves fleshy; fruit oblong; northern sea-coast species. 2. *L. Scoticum.*

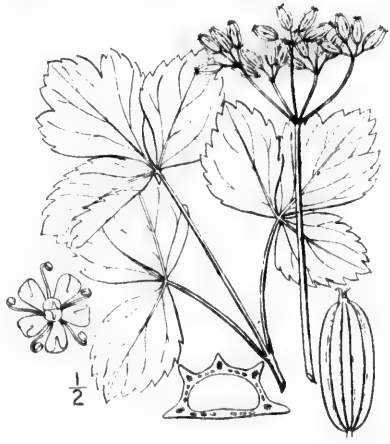
1. Ligusticum Canadénse (L.) Britton. Nondo. Angelico. (Fig. 2654.)

Ferula Canadensis L. Sp. Pl. 247. 1753.
Ligusticum actaeifolium Michx. Fl. Bor. Am. 1: 166. 1803.
Ligusticum Canadense Britton, Mem. Torr. Club, 5: 240. 1894.

Stout, erect, much branched above, 2°–6° high. Leaves thin, those of the stem sessile or nearly so, the lower and basal petioled, often 1° wide, their primary divisions ternate, the secondary ternate or pinnate; segments ovate, or oval, 1½–5′ long, acute at the apex, rounded at the base, coarsely and sharply serrate, or those of the uppermost leaves linear-lanceolate and entire; umbels mostly twice compound, sometimes 10′ broad; bracts of the involucre 2–6, linear; bracts of the involucels several; pedicels 1″–2″ long in fruit; fruit ovoid, 2″–3″ long with prominent slightly winged ribs; oil-tubes 3–4 in the intervals; seed angled on the back.

In rich woods, southern Pennsylvania to Georgia, Missouri and Kentucky. Ascends to 3000 ft. in North Carolina. June–Aug.





2. Ligusticum Scóticum L. Scotch Lovage. Sea Parsley. (Fig. 2655.)

Ligusticum Scoticum L. Sp. Pl. 250. 1753.

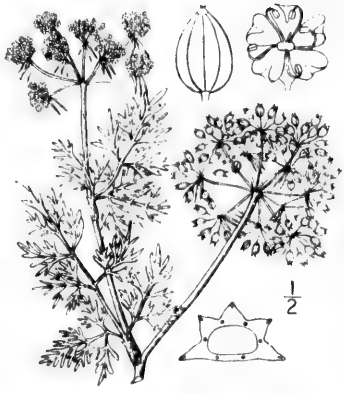
Stem simple, or rarely slightly branched, 10′–3° high. Leaves mostly biternate, the segments thick and fleshy, broadly obovate or oval, 1′–4′ long, shining, obtuse or acute at the apex, narrowed or the terminal one rounded at the base, dentate with blunt or sharp teeth; umbels 2′–4′ broad in fruit, the rays 1′–3′ long; pedicels 2″–5″ long; fruit oblong, 3″–5″ long, the ribs prominent and somewhat winged; seed rounded on the back.

Along salt marshes, Connecticut to Labrador and the lower St. Lawrence river. Also on the Pacific coast and the shores of northern Europe and Asia. The plant of the New England coast has more acute leaf-segments than the typical form. July–Aug.

14. AETHÙSA L. Sp. Pl. 256. 1753.

Annual glabrous herbs, with pinnately dissected leaves, and compound umbels, both terminal and opposite the leaves. Involucre none, or of a single bract. Bracts of the involucels 1–5, setaceous, turned to one side. Calyx-teeth obsolete. Petals inflexed at the apex. Stylopodium broad, thick. Fruit globose-ovoid, glabrous. Carpels dorsally compressed, the ribs prominent, corky, acute, nearly equal; oil-tubes solitary in the intervals. Seed-face flat. [Greek, burning, from the sharp taste.]

A monotypic genus of Europe and Asia.



1. AEthusa Cynàpium L. Fool's Parsley. (Fig. 2656.)

AEthusa Cynapium L. Sp. Pl. 256. 1753.

Erect, leafy, dichotomously branched, rather slender, 1°–2½° high. Leaves 2–3-pinnate, the lower slender-petioled, the upper nearly sessile; petiole-bases dilated; ultimate segments linear, acutish; umbels long-peduncled, 2′–3′ broad in fruit, 8–12-rayed; rays ½′–1½′ long; pedicels 1″–4″ long; bractlets of the involucels 2–4, linear, turned downward; fruit about 1½″ long, somewhat longer than broad.

In waste places, Nova Scotia to New Jersey, west to Minnesota. Poisonous. Adventive from Europe. Called also False or Dog's Parsley, Dog-poison, and Fool's Cicely. June–Sept.

15. COELOPLEÙRUM Ledeb. Fl. Ross. 2: 361. 1844.

Stout and tall maritime perennials, with large 2–3-ternate leaves, inflated petioles, and compound umbels of greenish white flowers. Involucre of a few linear deciduous bracts, or none. Involucels of numerous linear bracts. Calyx-teeth obsolete. Petals with an inflexed apex. Stylopodium depressed. Fruit oblong, scarcely flattened; dorsal and intermediate ribs prominent, corky-thickened, the lateral ones slightly broader, acute but not winged; oil-tubes solitary in the intervals, 1–2 under each rib and 2–4 on the commissural side. Seed loose in the pericarp, its face flat or slightly concave. [Greek, hollow-ribbed.]

Two species, one widely distributed in the northern hemisphere, the other on our northwestern coast.

1. Coelopleurum Gmélini (DC.) Ledeb. Sea-coast Angelica. (Fig. 2657.)

Angelica Archangelica Schrank, Denks. Regens. Bot. Gesell. 1: Abth. 2, 13. 1818. Not L. 1753.
Archangelica Gmelini DC. Prodr. 4: 170. 1830.
Archangelica peregrina Nutt.; T. & G. Fl. N. A. 1: 622. 1840.
Coelopleurum Gmelini Ledeb. Fl. Ross. 2: 361. 1844.

Stout, branching, 2°–3° high, glabrous below, the umbels and upper part of the stem puberulent. Lower leaves large, 2–3-ternate, the segments thin, ovate, acute or acuminate, sharply and irregularly dentate and incised, 1½′–2½′ long; umbels 3′–5′ broad, 10–25-rayed; rays 1′–2′ long; pedicels slender, 3″–6″ long; fruit oblong or nearly globose, 2½″–3½″ long, the lateral ribs scarcely stronger than the others.

Sea-coast, Greenland to Massachusetts, on the lower St. Lawrence river and the Pacific coast. Also on the coasts of eastern Asia. Summer.

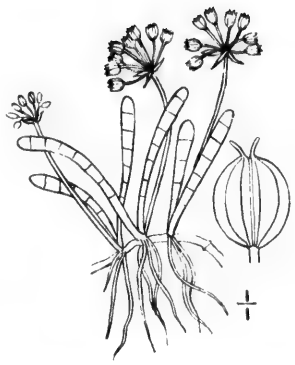
16. LILAEÓPSIS Greene, Pittonia, 2: 192. 1891.

[CRANTZIA Nutt. Gen. 1: 177. 1818. Not Scop. 1777.]

Small creeping glabrous perennial marsh herbs, the leaves reduced to linear terete septate hollow petioles, with simple umbels of white flowers. Bracts of the involucre several, small. Calyx-teeth acute. Petals concave, acute, incurved at the apex. Stylopodium conic. Fruit glabrous, globular, somewhat flattened laterally. Carpels nearly terete, the dorsal and intermediate ribs filiform, the lateral ones much larger and corky-thickened, the commissural faces each with a corky longitudinal projection; oil-tubes solitary in the intervals. Seed terete. [Greek, resembling the genus *Lilaea*.]

A genus of wide geographic distribution, usually regarded as monotypic, but probably consisting of several species.

1. Lilaeopsis lineàta (Michx.) Greene. Lilaeopsis. (Fig. 2658.)



Hydrocotyle Chinensis L. Sp. Pl. 339. 1753?
Hydrocotyle lineata Michx. Fl. Bor. Am. 1: 162. 1803.
Crantzia lineata Nutt. Gen. 1: 178. 1818.
Lilaeopsis lineata Greene, Pittonia, 2: 192. 1891.

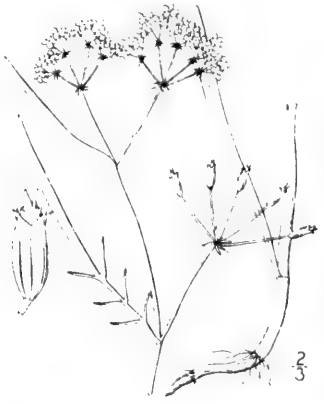
Creeping, rooting in the mud, 2′–5′ long. Petioles linear-spatulate, very obtuse, generally 1′–3′ long but sometimes much longer, about 1½″ thick, hollow, distinctly jointed by transverse partitions; peduncles somewhat exceeding the leaves; umbels 5–10-rayed, the rays 1½″–3″ long; fruit about 1″ long.

In salt and brackish marshes, and on muddy river-shores, Massachusetts to Florida, west to Mississippi. June–Aug.

17. CYNOSCIÀDIUM DC. Mem. Omb. 44. *pl. 11.* 1829.

Glabrous slender branching annuals, the lower and basal leaves mostly linear and entire, those of the stem mainly divided into few linear segments. Involucres and involucels of several subulate or narrowly linear bracts, sometimes deciduous. Flowers small, white, in terminal and lateral compound umbels. Calyx-teeth short, persistent. Fruit ovoid, or oblong, nearly terete, glabrous, strongly ribbed, the lateral ribs the larger; oil-tubes solitary in the intervals and 2 on the commissural side of each carpel. Seed-face flat. Stylopodium conic. [Greek, dog-celery.]

Two known species, natives of the southern United States.



1. Cynosciadium pinnàtum DC. Pinnate Cynosciadium. (Fig. 2659.)

Cynosciadium pinnatum DC. Mem. Omb. 45. *pl. 11. f. B.* 1829.

Stem erect, or assurgent, 1°–2° high. Lower and basal leaves petioled, the blade elongated-linear, entire, acuminate or acute at each end, 1′–3′ long, 1½′–3′ wide; stem-leaves pinnately divided nearly to the midvein into 3–9 narrowly linear entire segments, the terminal segment much larger than the lateral ones, or some of them entire; bracts of the involucres 2″–3″ long; umbels 4–10-rayed; rays very slender, ½′–1½′ long; fruit about 2″ long, less than 1″ wide, tipped by the conic stylopodium and crowned by the ovate calyx-teeth.

In wet soil, Missouri to the Indian Territory and Texas. May–Aug.

18. ERÝNGIUM L. Sp. Pl. 232. 1753.

Herbs, with spiny-toothed lobed dentate or sometimes dissected, rarely entire leaves, and dense bracted heads or spikes of small white or blue sessile flowers, subtended by bractlets. Calyx-teeth rigid, pungent, or acute. Petals erect, the apex emarginate with a long inflexed point. Disk expanded. Styles slender. Fruit obovoid or ovoid, scaly or tuberculate, somewhat flattened laterally. Carpels nearly terete, their ribs obsolete or none, the oil-tubes usually 5. [Greek, a kind of thistle.]

About 150 species, of wide geographic distribution in tropical and temperate regions. Besides the following, about 18 others occur in the southern and western parts of North America.

Plants erect, tall; stem-leaves spiny or bristly-margined.
- Leaves elongated-linear, parallel-veined. 1. *E. aquaticum.*
- Leaves elongated-linear, reticulate-veined. 2. *E. Virginianum.*
- Stem-leaves palmately incised-pinnatifid. 3. *E. Leavenworthii.*

Plants prostrate, slender; leaves unarmed. 4. *E. prostratum.*

1. Eryngium aquáticum L. Rattlesnake-master. Button Snakeroot. (Fig. 2660.)

Eryngium aquaticum L. Sp. Pl. 232. 1753.
Eryngium yuccaefolium Michx. Fl. Bor. Am. 1: 164. 1803.

Stout, 2°–6° high, glabrous; stem striate, simple, or branched above. Leaves elongated-linear, acuminate at the apex, mostly clasping at the base, finely parallel-veined, the lower sometimes 3° long and 1½′ wide, the upper smaller, all with bristly margins; heads stout-peduncled, globose-ovoid, 6″–10″ long, longer than the ovate or lanceolate cuspidate bracts; bractlets similar to the bracts but smaller; calyx-lobes ovate, acute; fruit scaly, about 1″ long.

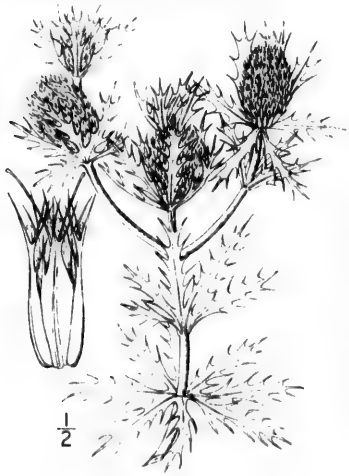
In wet soil or upland, pine-barrens of New Jersey to Illinois and Minnesota, south to Florida, Missouri and Texas. June–Sept.

2. Eryngium Virginiànum Lam. Virginian Eryngo. (Fig. 2661.)

E. Virginianum Lam. Encycl. 4: 759. 1797.

Stem slender, erect, glabrous, branched above, striate, 1°–3° high. Upper stem-leaves linear, acuminate, sessile and clasping at the base, 2′–8′ long, spiny-toothed or rarely laciniate, reticulate-veined; basal and lower leaves long-petioled, the blade linear-oblong, often obtuse, entire, or remotely denticulate; heads subglobose, 4″–7″ long, equalling or shorter than the lanceolate spiny-toothed or entire reflexed bracts; bractlets usually 3-cuspidate with the middle cusp longest; calyx-lobes lanceolate, cuspidate; fruit scaly.

In marshes near the coast, New Jersey to Florida, west to Texas. July–Sept.



3. Eryngium Leavenwórthii T. & G. Leavenworth's Eryngo. (Fig. 2662.)

Eryngium Leavenworthii T. & G. Fl. N. A. 1: 604. 1840.

Stout, glabrous, 1°–3° high, branched above. Stem-leaves sessile, or somewhat clasping at the base, palmately pinnatifid into narrow spiny-toothed segments; basal and lowest leaves oblanceolate, mostly obtuse, spinose-denticulate; heads peduncled, ovoid-oblong, 1′–2′ long, nearly 1′ thick, equalling or longer than the spinose bracts; bractlets 3–7-cuspidate, those of the upper part of the heads large and resembling the bracts; calyx-lobes pinnatifid, longer than the fruit.

In dry soil, Kansas, to Texas. July–Oct.

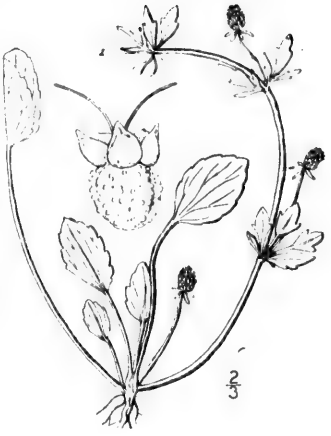
4. Eryngium prostràtum Nutt. Prostrate Eryngo. (Fig. 2663.)

Eryngium integrifolium Walt. Fl. Car. 112. 1788?

Eryngium prostratum Nutt.; DC. Prodr. 4: 92. 1830.

Prostrate, diffusely branched, rooting from the nodes, the branches very slender, sometimes 18′ long. Lower and basal leaves slender-petioled, oval or oblong, mostly obtuse, entire, or crenate-dentate; stem-leaves smaller, often clustered at the nodes, ovate, few-toothed, or entire or some of them 3-parted; heads ovoid-oblong, dense, about 3″ long, mostly shorter than the lanceolate reflexed bracts; bractlets very small; fruit about ½″ long, tuberculate.

In low grounds, Kentucky to Missouri, south to Florida and Texas. Summer.



19. SANÍCULA L. Sp. Pl. 235. 70. 1753.

Perennial or biennial mostly glabrous herbs, with alternate palmately 3–7-foliolate or pinnatifid leaves and small yellowish white or purplish flowers in compound generally few-rayed umbels. Umbellets globose. Involucre foliaceous; involucels small. Calyx-lobes membranous, mostly persistent. Petals obovate, or narrower, incurved at the apex, emarginate. Disk flat. Fruit somewhat flattened laterally, subglobose, covered with hooked bristles in our species. Carpels not ribbed; oil-tubes usually 5. [From the Latin, to heal.]

About 20 species, natives of the north temperate zone, South America and South Africa. Besides the following, about 10 others occur in the southern and western parts of the United States.

✲ **Perennial; some staminate flowers in separate heads; styles longer than the bristles.**

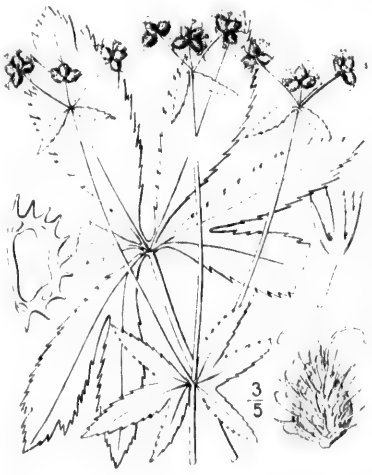
Petals and anthers greenish white; calyx-segments lanceolate, cuspidate; fruit 3″ long. 1. *S. Marylandica.*

Petals and anthers yellow; calyx-lobes ovate, obtuse; fruit 1½″ long, or less. 2. *S. gregaria.*

✲ ✲ **Biennial; staminate flowers never in separate heads; styles shorter than the bristles.**

Leaves 3–5 divided; pedicels of staminate flowers 1″ long; fruit less than 2″ long. 3. *S. Canadensis.*

Leaves 3-foliolate; pedicels of staminate flowers 2″ long; fruit 3″ long, or more. 4. *S. trifoliata.*



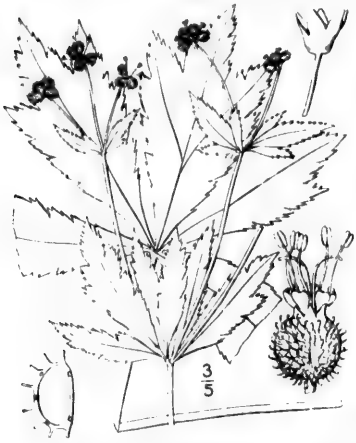
1. Sanicula Marylándica L. Sanicle. Black Snake-root. (Fig. 2664.)

Sanicula Marylandica L. Sp. Pl. 235. 1753.

Rather stout, 1½°–4° high, usually simple, topped by a 2–4-rayed umbel. Leaves firm, bluish green, the basal long-petioled, the upper sessile, 5–7-parted; segments 1½′–6′ long, obovate to oblanceolate, irregularly serrate or dentate, often incised; involucral leaves much smaller, 3-cleft; involucel-bracts small, rarely 1″ long; pedicels of staminate flowers 2″ long; calyx 1″ long, parted into subulate segments; petals greenish white, little exceeding the calyx; anther greenish white; fruit sessile, ovoid, 3″ long, the slender recurved styles longer than the stout bristles; oil-tubes 5, large; seed furrowed dorsally.

In rich woods, Newfoundland to the Rocky Mountains, south to Georgia. May-July.

2. Sanicula gregària Bicknell. Clustered Snake-root. (Fig. 2665.)



Sanicula gregaria Bicknell, Bull. Torr. Club, 22: 354. 1895.

Stems erect, weak, usually clustered, 1°–3° high, umbellate-branched, the branches slender. Leaves thin, bright green, 5-divided; segments stalked, obovate-cuneate to lanceolate, acute or acuminate, doubly serrate with bristle-tipped teeth, sharply incised, mostly less than 3′ long; basal leaves numerous, those of the stem only 1–2, petioled; involucral leaves large, 3-parted, those of the involucre foliaceous; pedicels of staminate flowers 1″–1½″ long, 3 or 4 times the length of the minute campanulate calyx; calyx-lobes ovate, obtuse; petals yellowish, much surpassing the calyx; anthers bright yellow; fruit stipitate, broadly obovoid, 1½″ long, the slender styles recurved; bristles weak, very small; oil-tubes 5, small; seed not furrowed.

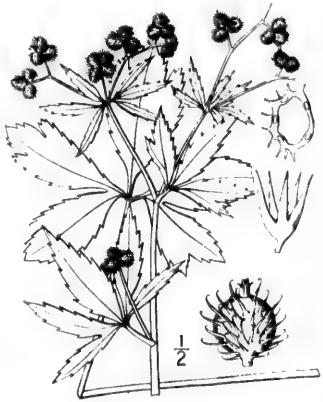
In moist woods and thickets, southern New York to Virginia, Kansas and Nebraska. May–June.

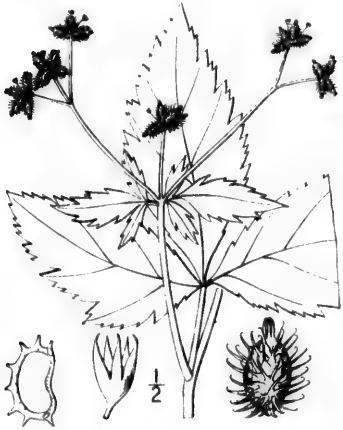
3. Sanicula Canadénsis L. Short-styled Snake-root. (Fig. 2666.)

Sanicula Canadensis L. Sp. Pl. 235. 1753.
Sanicula Marylandica var. *Canadensis* Torr. Fl. U. S. 302. 1824.

Rather dull green; 1°–4° high, widely branched, the branches forked, the umbellate fruit-bearing rays only 1″–5″ long. Stem leafy; leaves petioled, 3–5-divided; segments cuneate-obovate to narrowly oblong, acute, mucronate-serrate, or incised, often small, but sometimes 3½′ long; involucral leaves small; those of the involucel bract-like; staminate flowers few, on pedicels 1″ long or less; calyx ½″ long, parted into linear-lanceolate acute lobes which exceed the minute white petals; fruit short-stipitate, subglobose, 1″–1½″ long; the bristles slender; styles short, included; oil-tubes 5; seed dorsally furrowed.

In dry woodlands, Massachusetts to Florida, Nebraska and Texas. June–Aug.





4. Sanicula trifoliàta Bicknell. Large-fruited Snake-root. (Fig. 2667.)

S. trifoliata Bicknell, Bull. Torr. Club, 22: 359. 1895.

Stem slender, 1°–2½° high, the branches alternate, the lower often nearly erect, simple, or forked into numerous branchlets; umbels of 3–5 often irregular rays 4″–12″ long, leaves rather bright green, thin, slender-petioled, 3-divided, the lateral segments often cleft; segments stalked, broadly ovate, or obovate, or the lateral ones rhomboid, acute, coarsely doubly serrate, or incised, the teeth spinulose-cuspidate; staminate flowers few, on slender pedicels about 2″ long; calyx ½″ long, its linear rigid lobes incurved, subulate; petals white, about half as long as the calyx; styles short, included; fruit 3″ long, or more; larger oil-tubes 2, with numerous minute ones; seed not sulcate.

In hilly woods, Connecticut to Ontario, southeastern New York and Indiana. June–July.

20. AMMOSELÌNUM T. & G. Pac. R. R. Rep. 2: 165. 1855.

Low branching annuals, with ternately divided finely dissected leaves, the ultimate leaf-segments linear, spatulate, or oblong, and small white flowers in terminal sessile or pedunculed slender-rayed umbels. Involucels of a few linear or dissected bracts. Calyx-teeth obsolete. Fruit ovate to oval, laterally flattened, strongly ribbed, the ribs tuberculate or spinulose-tuberculate; pericarp very thick and dense; oil-tubes solitary in the intervals, and 2 on the commissural side. Styles and conic stylopodium short. [Greek, sand-parsley.]

Two known species, natives of the southwestern United States and Mexico.

1. Ammoselinum Pòpei T. & G. Pope's Sand-parsley. (Fig. 2668.)

Ammoselinum Popei T. & G. Pac. R. R. Rep. 2: 165. 1855.
Apium Popei A. Gray, Proc. Am. Acad. 7: 343. 1868.

A diffusely branched herb, 6′–15′ high, the angled branches, rays of the umbels and pedicels rough. Lower leaves slender-petioled, the upper sessile, or nearly so, all dissected into linear obtuse or acutish segments about ½″ wide; involucre usually of 1 dissected leaf or more; involucel-bracts few, entire, or dissected; longer rays of the umbels 1′ long in fruit, or less, the shorter ones often 1-flowered; fruit ovate, 2″–2½″ long, narrowed above, 1″ wide, or a little more, the ribs rather strongly tubercled, or even spinulose.

In sandy soil, western Kansas to Texas, Mexico and Arizona. April–May.

21. FOENÍCULUM Adans. Fam. Pl. 2: 101. 1763.

Erect biennial or perennial glabrous herbs, with pinnately decompound leaves, the segments linear or capillary, and compound umbels of yellow flowers. Involucre and involucels none. Calyx-teeth obsolete. Petals obtuse or slightly retuse at the apex. Stylopodium large, conic. Fruit linear-oblong, glabrous, terete or nearly so. Carpels half-terete, dorsally flattened, prominently ribbed; oil-tubes solitary in the intervals. Seed-face flat, or slightly concave. [Latin, diminutive of foenum, hay, from its odor.]

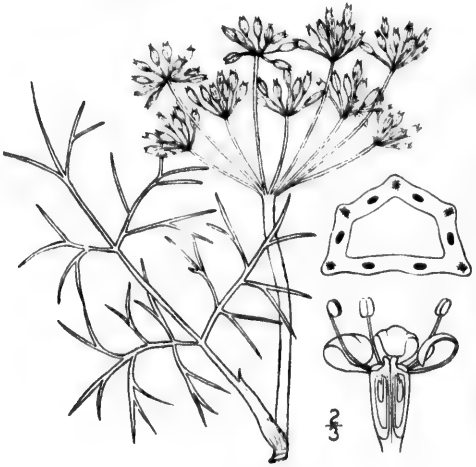
About 4 species, natives of the Old World.

1. Foeniculum Foenículum (L.) Karst. Fennel. (Fig. 2669.)

Anethum Foeniculum L. Sp. Pl. 263. 1753.
Foeniculum vulgare Gaertn. Fruct. & Sem. 1: 105. 1788.
Foeniculum Foeniculum Karst. Deutsch. Fl. 837. 1880–83.

Perennial, branched, 2°–4° high. Leaves very finely dissected into capillary segments; petioles broad, clasping; umbels large, 9–25-rayed, the rays rather stout, somewhat glaucous, 1′–3′ long in fruit; pedicels 1″–4″ long, slender; fruit about 3″ long.

In waste places, New Jersey and Pennsylvania to Virginia and Louisiana, escaped from gardens. Adventive from Europe. Called also Dill, Finkel, Spingel. July–Sept.



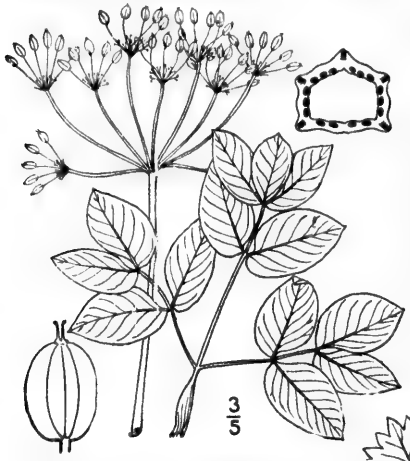
22. PIMPINÉLLA L. Sp. Pl. 263. 1753.

Glabrous, perennial herbs, with compound leaves and compound umbels of yellow or white flowers. Involucre and involucels none in our species. Calyx-teeth obsolete. Petals inflexed at the apex. Stylopodium thick, broadly conic. Fruit ovate, or oblong, sometimes broader than long, more or less compressed. Carpels obscurely 5-angled with slender equal distant ribs; oil-tubes numerous, 2–6 in the intervals. Seed-face flat or slightly convex, [Latin; perhaps from bipinnula, *i. e.*, bipinnate.]

About 75 species, natives of the northern hemisphere and South Africa. Besides the following, another is said to occur in the western United States.

Leaves ternately compound, the segments entire; flowers yellow. 1. *P. integerrima.*
Leaves pinnate, the segments incised; flowers white. 2. *P. Saxifraga.*

1. Pimpinella integérrima (L.) A. Gray. Yellow Pimpernel. (Fig. 2670.)



Smyrnium integerrimum L. Sp. Pl. 263. 1753.
Zizia integerrima DC. Rap. Pl. Jard Genève, 3: 7. 1830.
Pimpinella integerrima A. Gray, Proc. Am. Acad. 7: 345. 1868.

Erect, branched, glabrous, somewhat glaucous, 1°–3° high, slender. Leaves 2–3-ternate, the upper with short dilated petioles, the lower long-petioled; segments ovate, oval, or lanceolate, obtuse, or acutish and often mucronulate at the apex, entire, 6″–12″ long; umbels slender-peduncled; rays 10–20, 2′–4′ long in fruit; flowers yellow; pedicels slender; fruit oval, glabrous, about 2″ long.

In rocky or sandy soil, Quebec to North Carolina, west to Ontario, Minnesota and Mississippi. Ascends 4000 ft. North Carolina. May–June.

2. Pimpinella Saxífraga L. Bennet. Pimpernel. Burnet Saxifrage. (Fig. 2671.)

Pimpinella Saxifraga L. Sp. Pl. 163. 1753.

Erect, glabrous, 1°–2° high, somewhat branched. Leaves pinnate; segments of the lower 9–19, sharply serrate, or incised, ovate, or nearly orbicular, 8″–12″ long; upper leaves shorter-petioled and of fewer segments cut into narrower lobes; flowers white; umbels slender-peduncled, 7–20-rayed; rays slender, 1′–1½′ long in fruit; fruit oval.

In waste places, eastern Pennsylvania and northwestern New Jersey at several localities in the valley of the Delaware, and in Ohio. Adventive from Europe. June–Oct.

23. APIÁSTRUM Nutt.; T. & G. Fl. N. A. 1: 643. 1840.

Annual glabrous slender much branched herbs, with petioled finely dissected leaves, the leaf-segments linear or filiform. Flowers very small, white, in terminal or axillary compound unequal-rayed umbels. Involucre none; involucels of a few small bracts, or none. Calyx-teeth obsolete. Fruit ovate, or suborbicular, laterally flattened, tubercled, not ribbed; pericarp thin; oil-tubes few, not clustered, 2 on the commissural side. Seed-face concave. Stylopodium very small. [Greek, false celery.]

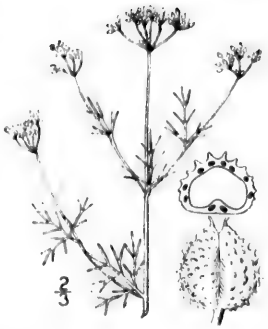
Two known species, the following, and one in California.

1. **Apiastrum pàtens** (Nutt.) Coult. & Rose. Spreading Apiastrum. (Fig. 2672.)

Leptocaulis patens Nutt.; DC. Prodr. **4**: 107. 1830.
Apium patens S. Wats. Bibl. Index, 1: 413. 1878.
Apiastrum patens Coult. & Rose, Rev. 110. 1888.

Erect, slender, 1°–2° high, divergently branched above. Stem-leaves short-petioled, biternately dissected into narrowly linear or filiform segments; umbels terminal, or axillary, ½′–1½′ broad; rays 3″–6″ long; pedicels 1½″–2″ long in fruit; fruit ovate, slightly more than ½″ long, more or less tuberculate, usually densely so.

Nebraska and Missouri to Texas and New Mexico. June.



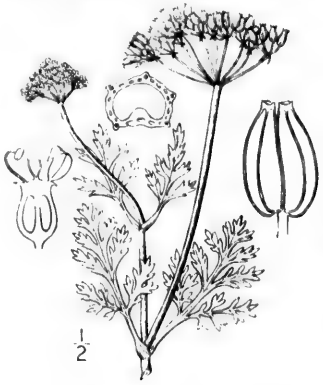
24. **MUSÍNEON** Raf. Journ. Phys. **91**: 71. 1820.

[ADORIUM Raf. Neog. 3. 1825.]
[MUSENIUM Nutt.; T. & G. Fl. N. A. 1: 642. 1840.]

Low perennial resiniferous herbs, branching or acaulescent, with pinnately decompound leaves, and compound umbels of yellow or white flowers. Involucre none. Bracts of the involucels few, narrow. Calyx-teeth ovate. Petals clawed, the apex long and infolded. Stylopodium small, depressed. Fruit ovate or ovate-oblong, slightly compressed laterally, smooth or nearly so in our species (roughened in *M. trachyspermum*.) Carpels somewhat 5-angled, the ribs filiform, equal; oil-tubes usually 3 in the intervals, the middle one usually largest. Seed-face concave. [A name of fennel.]

Three known species, natives of northwestern and central North America.

Stem leafy, branching; fruit about 2″ long. 1. *A. divaricatum.*
Plant acaulescent, tufted; fruit about 1″ long. 2. *A. tenuifolium.*



1. **Musineon divaricàtum** (Pursh) Nutt. Leafy Musineon. (Fig. 2673.)

Seseli divaricatum Pursh, Fl. Amer. Sept. 732. 1814.
Musenium divaricatum Nutt.; T. & G. Fl. N. A. 1: 642. 1840.
Adorium divaricatum Rydberg, Bot. Surv. Neb. 3: 37. 1894.

Decumbent or ascending, branched, glabrous, 6′–12′ high. Leaves bipinnatifid, petioled, 2′–6′ long, the rachis narrowly winged, the segments oblong or ovate, acutish, 3–5-dentate; umbels mostly long-peduncled, 1′–2½′ broad, 8–25-rayed; rays rather stout, 3″–12″ long; pedicels about 1½″ long in fruit; flowers yellow; fruit smooth, or very nearly so, about 2″ long.

Prairies, Manitoba and the Upper Missouri region to the Northwest Territory and Oregon. May-June.

2. **Musineon tenuifòlium** Nutt. Scapose Musineon. (Fig. 2674.)

Musenium tenuifolium Nutt.; T. & G. Fl. N. A. 1: 642. 1840.
Adorium tenuifolium Kuntze, Rev. Gen. Pl. 264. 1891.

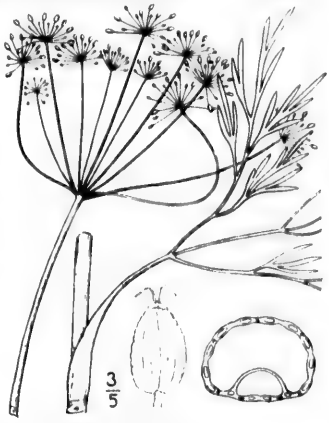
Acaulescent from a woody root, tufted, glabrous, 2′–6′ high, pale and somewhat glaucous. Leaves petioled, decompound into linear acute incised segments; esc apequaling or slightly exceeding the leaves; umbel ½′–1′ broad, 5–18-rayed; rays 2″–5″ long; flowers greenish white (?); pedicels ½″–2″ long in fruit; fruit oblong, nearly smooth, about 1″ long and ½″ thick, its ribs rather prominent when dry.

In dry rocky places, Nebraska, and in the Rocky Mountains. June-July.

25. EÙLOPHUS Nutt.; DC. Mon. Omb. 69. *pl. 2.* 1829.

Perennial slender glabrous branching herbs, from deep tuberous roots, with ternately compound leaves, and long-peduncled compound umbels of white or pink flowers. Involucre generally of 1 bract, sometimes none. Involucels of several bracts. Calyx-teeth usually prominent. Petals obovate, the tip inflexed. Stylopodium conic. Styles recurved. Fruit glabrous, linear to oblong in our species; ribs filiform, with 1–5 oil-tubes in the intervals. Seed-face concave. [Greek, well-plumed; application not apparent.]

About 5 species, natives of North America. Besides the following, 4 others occur in the western United States.



1. Eulophus Americànus Nutt. Eastern Eulophus. (Fig. 2675.)

Eulophus Americanus Nutt.; DC. Mem. Omb. 69. *pl. 2.* 1829.

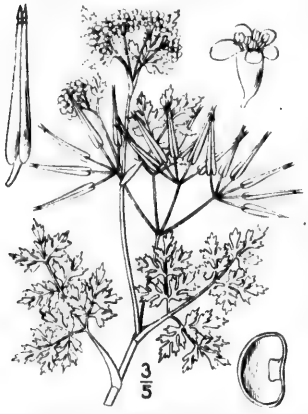
Erect, 3°–5° high. Basal and lower leaves large, long-petioled, ternately compound into linear acute or obtusish segments; upper leaves similar, smaller and shorter-petioled; petioles sheathing at the base; umbels terminal, 3′–4′ broad, the rays 6–12, very slender, 2′–4′ long; involucre of 1–2 bracts, or none; involucels of several narrowly lanceolate acuminate bracts; pedicels almost filiform, 4″–8″ long in fruit; flowers whitish (?); fruit oblong, 2″–3″ long.

In dry soil, Ohio and Illinois to Missouri, Tennessee and Arkansas. July.

26. ANTHRÍSCUS Hoffm. Gen. Umb. 38. 1814.

Annual or biennial herbs, with ternately or pinnately decompound leaves, and compound umbels of white flowers. Involucre commonly none; involucels of numerous bracts. Calyx-teeth obsolete or minute. Apex of the petals inflexed. Stylopodium conic or depressed. Fruit linear in our species, beaked, laterally compressed, smooth in our species. Carpels nearly terete, ribless except at the beak; oil-tubes none. Seed-face channeled. [Greek name of this or some allied plant.]

About 10 species, natives of warm and temperate regions of the Old World.



1. Anthriscus Cerefòlium (L.) Hoffm. Garden Chervil or Beaked-Parsley. (Fig. 2676.)

Scandix Cerefolium L. Sp. Pl. 368. 1753.
Chaerophyllum sativum Lam. Encycl. 1: 684. 1783.
Anthriscus Cerefolium Hoffm. Gen. Umb. 41. 1814.

Annual, glabrous, or finely pubescent above, much branched, 1½°–2° high. Basal and lower leaves slender-petioled, the upper smaller, nearly sessile, all ternately decompound into small segments; umbels numerous, rather short-peduncled, 3–6-rayed, the rays divergent, ½′–1½′ long in fruit; pedicels stout, 2″–3″ long; bractlets of the involucels linear-lanceolate, acuminate, about 1″ long; fruit linear, 3″ long, glabrous and ribless, tipped with a ribbed beak of one-third its own length.

Roadsides and woodlands in eastern and southern Pennsylvania. Naturalized from Europe. May–June.

Anthriscus sylvéstris (L.) Hoffm., Wild Beaked-Parsley, or Wild Chervil, a tall annual with decompound leaves, and glabrous beakless fruit, has been found as a waif on Staten Island, and in ballast about the seaports.

Anthriscus Anthriscus (L.) Karst. (*A. vulgaris* Pers.) Bur-Chervil, readily recognized by its short-beaked muricate fruit, has been found as a waif in Nova Scotia, according to Macoun.

27. BUPLEÙRUM L. Sp. Pl. 236. 1753.

Annual or perennial herbs, with simple entire clasping or perfoliate leaves, and compound umbels of yellow or greenish-yellow flowers. Involucre none in our species. Involucels of 5 ovate mucronate bracts. Calyx-teeth obsolete. Petals broad, the apex inflexed or infolded. Stylopodium conic. Styles short. Fruit oblong or oval, somewhat compressed laterally. Carpels angled, with slender equal ribs; oil-tubes none in our species. Seed-face concave. [Greek, ox-ribbed, referring to the leaves.]

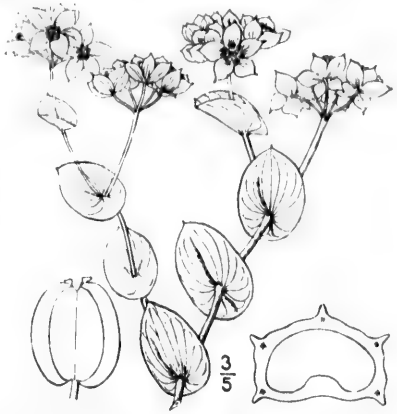
About 65 species of wide geographic distribution. Besides the following another occurs in the Rocky Mountains and northwestern America.

1. Bupleurum rotundifòlium L. Hare's Ear. Thorough-wax or -wort. Modesty. (Fig. 2677.)

Bupleurum rotundifolium L. Sp. Pl. 236. 1753.

Annual, erect, rather stiff, branching, glabrous, pale, 1°–2° high. Leaves broadly ovate, or oval, mostly obtuse, mucronate, 1′–1½′ long, perfoliate, or the lowest narrowed into a petiole; umbels terminal, 3–6-rayed, the rays seldom over 4″ long; bracts of the involucels about as long as the rays, yellowish; fruit glabrous, about 1½″ long.

In cultivated fields, New York to North Carolina, west to South Dakota, Missouri and Arkansas. Also in the southwest. Naturalized from Europe. July–Aug.



28. CHAEROPHÝLLUM L. Sp. Pl. 258. 1753.

Herbs, our species annuals, with ternately or pinnately decompound leaves and small compound umbels of white flowers. Involucre none or rarely of 1–2 bracts. Involucels of numerous small bractlets. Calyx-teeth obsolete. Petals inflexed at the apex. Stylopodium small, conic. Fruit oblong or linear-oblong, glabrous or pubescent, flattened laterally. Carpels 5-angled, slightly flattened dorsally, the ribs slender, equal, obtuse; oil-tubes solitary in the intervals. Seed-face channeled. [Greek, pleasant leaf, from the fragrance.]

About 30 species, natives of the warmer parts of the north temperate zone and northern Africa. The following are the only known North American species.

Fruit not beaked, its ribs slender, narrower than the intervals between them. 1. *C. procumbens.*
Fruit beaked, its prominent ribs mostly as broad as the intervals. 2. *C. Teinturieri.*

1. Chaerophyllum procúmbens (L.) Crantz. Spreading Chervil. (Fig. 2678.)

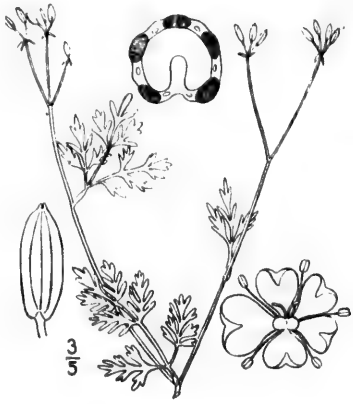
Scandix procumbens L. Sp. Pl. 257. 1753.
C. procumbens Crantz, Class. Umb. 77. 1767.

Much branched, more or less pubescent, slender, spreading, ascending or erect, 6′–20′ high. Lower leaves slender-petioled, ternately decompound, the divisions ovate, pinnatifid, the ultimate segments obtuse; upper leaves smaller, nearly sessile; umbels 2-6-rayed; rays 1′–2′ long in fruit; flowers few in the umbellets; bracts of the involucels ovate; fruit glabrous, linear-oblong, 2″–2½″ long, narrowed but not beaked at the summit, the ribs narrower than the intervals between them.

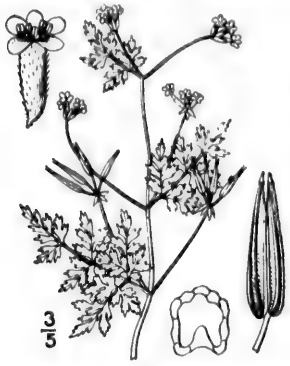
In moist ground, New York and southern Ontario to Michigan, south to North Carolina and Kansas. April–June.

Chaerophyllum procúmbens Shórtii T. & G. Fl. N. A. 1: 637. 1840.

Fruit broader, ovate-oblong, pubescent, blunt, or scarcely narrowed at the summit. Pennsylvania to Kentucky, Louisiana and Arkansas.



2. Chaerophyllum Teinturièri Hook. Teinturier's Chervil. (Fig. 2679.)



Chaerophyllum Teinturieri Hook. Comp. Bot. Mag. 1: 47. 1835.
Chaerophyllum procumbens var. *Teinturieri* C. & R. Bot. Gaz. 12: 160. 1887.

Similar to the preceding species, more or less pubescent, much branched, often taller. Ultimate leaf-segments acute or obtuse; rays of the umbels 1′–3′ long; fruit 3″–4″ long, less than 1″ wide, glabrous, or pubescent, narrowed above into a distinct beak, its prominent ribs as broad as the intervals between them, or broader.

In dry soil, southern Virginia to Tennessee and Missouri, south to Florida and Texas. Perhaps intergrades with the preceding species. March–May.

29. WASHINGTÒNIA Raf. Am. Month. Mag. 2: 176. 1818.

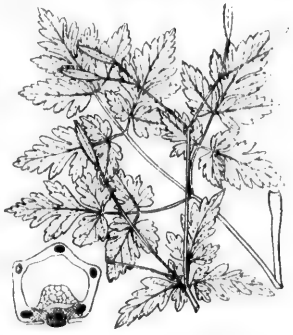
[Osmorrhiza Raf. loc. cit. 1818.]

Perennial herbs from fleshy clustered thickish roots, with decompound leaves, and loose few-rayed umbels of white flowers. Involucre and involucels of few narrow bracts, or none. Calyx-teeth obsolete. Petals incurved at the apex. Stylopodium small, conic. Fruit narrow, linear or oblong-linear, short-beaked, compressed, more or less bristly along the ribs, attenuated at the base. Carpels 5-angular, slightly flattened dorsally, the ribs acute and nearly equal; oil-tubes obsolete or none. [In honor of George Washington.]

About 15 species, natives of North America, eastern Asia and western South America. Besides the following about 8 others occur on the west coast and in the Rocky Mountains.

Pubescent; style and stylopodium ½″ long or less.
Style with stylopodium ½″ long; involucel-bracts mostly present. 1. *W. Claytoni.*
Stylopodium ¼″ long; involucel-bracts few or none. 3. *W. divaricata.*
Glabrate; style and stylopodium 1″ long. 2. *W. longistylis.*

1. Washingtonia Clàytoni (Michx.) Britton. Woolly Sweet-Cicely. (Fig. 2680.)



Myrrhis Claytoni Michx. Fl. Bor. Am. 1: 170. 1803.
Osmorrhiza brevistylis DC. Prodr. 4: 232. 1830.
O. Claytoni Clarke in Hook. f. Fl. Brit. Ind. 2: 690. 1879.

Erect, rather stout, at length widely branched above, 1½°–3° high, villous-pubescent throughout, especially when young. Lower leaves long-petioled, large, sometimes 1° wide, ternately decompound, the segments ovate or oval, incised-dentate; upper leaves nearly sessile, less compound; umbels long-peduncled, 2–6-rayed; rays divaricate, 1′–2′ long in fruit; involucels of several subulate bracts; pedicels 3″–8″ long; fruit about 6″ long, about 1″ wide; style and stylopodium ½″ long, the stylopodium slender-conic.

In woods, Nova Scotia to Minnesota, North Carolina, Illinois and Nebraska. Ascends 4000 ft. in Virginia. May–June.

2. Washingtonia longistylis (Torr.) Britton. Smoother Sweet-Cicely. (Fig. 2681.)

Myrrhis longistylis Torr. Fl. U. S. 310. 1824.
Osmorrhiza longistylis DC. Prodr. 4: 232. 1830.

Similar to the preceding species but only slightly pubescent, the stems and petioles at length quite glabrous; styles in fruit about 1″ long; bracts of the involucels lanceolate, 3″–4″ long, persistent.

In woods, Nova Scotia to Ontario, the Northwest Territory and Dakota, south to Alabama, Tennessee and Kansas. Ascends to 4200 ft. in North Carolina. Roots with a more spicy taste and stronger odor of anise than those of *W. Claytoni*. May–June.

3. Washingtonia divaricàta Britton. Western Sweet Cicely. (Fig. 2682.)

Osmorrhiza divaricata Nutt.; T. & G. Fl. N. A. 1: 639. Name only. 1840.

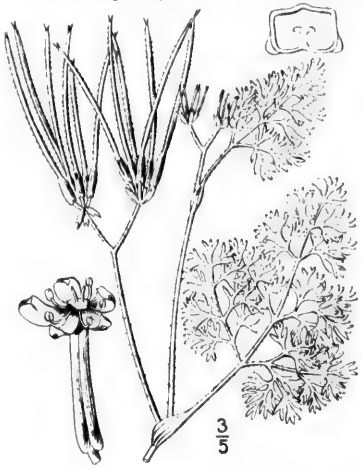
Foliage pubescent; stem slender, 2°–3° high, widely branched above; leaf-segments thin, ovate, acute, or acuminate, coarsely toothed and usually incised, ½′–2½′ long; umbels long-peduncled, 3-6-rayed, the very slender divaricate rays 2′–4′ long in fruit; involucels of 1–3 subulate bracts, or commonly none; pedicels very slender, 2″–1′ long; fruit about 6″ long, 1″ wide or rather more, beaked; style and stylopodium only ¼″ long, the stylopodium slender-conic.

Manitoba to South Dakota, British Columbia and California. May–June.

30. SCÁNDIX L. Sp. Pl. 256. 1753.

Annual herbs, with pinnately dissected leaves, the lobes very narrow. Flowers white, in compound several-rayed (rarely 1-rayed) umbels. Involucre none, or rarely of 1 bract. Involucels of several entire lobed or dissected bracts. Calyx-teeth minute or obsolete. Petals mostly unequal, the outer larger. Fruit linear, or linear-oblong, flattened laterally, prolonged into a beak mostly much longer than the body; primary ribs prominent; secondary ribs none; oil-tubes solitary, or wanting. Seed-face sulcate. Stylopodium short. [Greek name of the plant.]

About 10 species, natives of the Old World.



1. Scandix Pécten-Véneris L. Venus'- or Lady's-comb. Shepherd's-needle. (Fig. 2683.)

Scandix Pecten-Veneris L. Sp. Pl. 256. 1753.

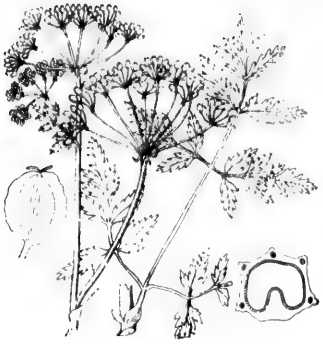
Pubescent, stem 6′–18′ high, branched, the branches ascending. Leaves 2–3-pinnately dissected, the lobes acute, less than ½″ wide; lower leaves long-petioled; involucre none; involucels of several lanceolate bracts sometimes 2–3-lobed at the apex; flowers very nearly sessile; fruiting carpels 4″–6″ long, strongly ribbed, terminated by a straight flat beak 1½′–2½′ long, about 1″ wide, its edges with stiff ascending hairs.

In waste places, northern New Jersey and in ballast about the sea-ports. Fugitive from Europe or Asia. May–July. Old English names, Pink or Adam's Needles, Beggar's-, Crake- or Crow-needles, Devil's Darning Needles, Hedgehog, Needle-Chervil, Poukenel.

31. CONÌUM L. Sp. Pl. 243. 1753.

Tall biennial glabrous herbs, with spotted stems, pinnately decompound leaves, and small white flowers in compound many-rayed umbels. Involucre and involucels of ovate acuminate bracts. Calyx-teeth obsolete; petals obcordate, or entire with a short inflexed point; fruit broadly ovate, glabrous, somewhat flattened laterally. Carpels strongly wavy-ribbed; large oil-tubes none, but a layer of oil-secreting tissue next the deeply concave seed. [Greek, hemlock.]

Two species, one of them native of Europe and Asia, the other of Africa.



1. Conium maculàtum L. Poison Hemlock. (Fig. 2684.)

Conium maculatum L. Sp. Pl. 243. 1753.

Erect, much-branched, 2°–5° high. Lower and basal leaves petioled, the upper sessile or nearly so, all pinnately dissected, the leaflets ovate in outline, thin, the ultimate segments dentate, or incised; petioles dilated and sheathing at the base; umbels 1′–3′ broad, the rays slender, 1′–1½′ long; pedicels filiform, 2″–3″ long in fruit; flowers about 1″ broad; fruit 1½″ long, about 1″ wide, its ribs very prominent when dry.

In waste places, Quebec and Ontario to Delaware, Indiana and Michigan. Also in California and Mexico. Naturalized from Europe. St. Bennet's Herb, Cashes, Wode-whistle. June–July.

32. SIUM L. Sp. Pl. 251. 1753.

Perennial marsh herbs, with simply pinnate stem-leaves, the lower and basal ones often pinnatisected, and compound large umbels of white flowers. Involucre and involucels of numerous narrow bracts. Calyx-teeth minute. Petals inflexed at the apex Stylopodium conic or depressed. Styles short. Fruit ovate or oval, somewhat compressed. Carpels with prominent ribs; oil-tubes 1–3 in the intervals. Seed-face flat. [Greek name of a marsh plant.]

About 8 species, natives of the north temperate zone and South Africa. The following are the only ones known to occur in the United States.

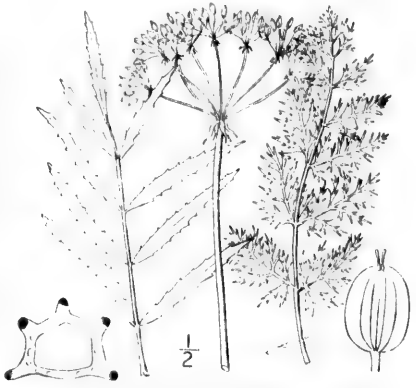
Plant stout, 2°–6° high; leaf-segments 7–17. 1. *S. cicutaefolium.*
Plant weak, 1°–3° high; leaf-segments 3–7. 2. *S. Carsoni.*

1. Sium cicutaefòlium Gmel. Hemlock Water-Parsnip. (Fig. 2685.)

Sium cicutaefolium Gmel. Syst. 2: 482. 1791.
S. lineare Michx. Fl. Bor. Am. 1: 167. 1803.
Sium latifolium of American authors, not of Linn.

Erect, stout, branched, 2°–6° high. Lower leaves long-petioled, the uppermost nearly sessile; petioles sheathing at the base; leaf-segments 7–17, linear, or lanceolate, 1½′–5′ long, 1½″–12″ wide, acuminate at the apex, sharply serrate, or the lowermost pectinately dissected; umbels 2′–3′ broad, 8–20-rayed; rays ½′–1½′ long; fruit ovate, compressed, about 1¼″ long, the ribs prominent; oil-tubes 1–3 in the intervals.

In swamps, Nova Scotia to British Columbia, south to Florida, Louisiana and California. Very variable in leaf-form. July–Oct.



2. Sium Càrsoni Durand. Carson's Water-Parsnip. (Fig. 2686.)

Sium Carsoni Durand; A. Gray, Man. Ed. 5, 196. 1867.

Stem slender, weak, 1°–2° long. Leaf-segments 3–7, those of the upper leaves linear, or lanceolate, acute, or acuminate, 1′–2′ long, 1½″–3″ wide, sharply serrate; lower leaves often floating and very thin, the segments broader and laciniate, or dissected; umbels 1′–2′ broad, 7–15-rayed; rays 6″–12″ long in fruit; fruit somewhat smaller than that of the preceding species.

In streams, Massachusetts and Rhode Island to Pennsylvania. July–Aug.

33. ÀPIUM L. Sp. Pl. 264. 1753.

Annual or perennial glabrous herbs, with pinnate or pinnately compound leaves, and white or greenish-yellow flowers in compound umbels. Involucre and involucels present in some species, wanting in others. Calyx-teeth obsolete. Petals ovate, mostly inflexed at the apex. Stylopodium depressed, or short-conic. Fruit ovate, or broader than long, smooth, or tuberculate. Carpels mostly with prominent ribs, somewhat 5-angled; oil-tubes mostly solitary in the intervals, 2 on the commissural side. Seed terete, or nearly so. [Latin name of these or some similar plants.]

About 15 species, of wide geographic distribution. Besides the following, 2 or 3 others occur in the southern and western United States.

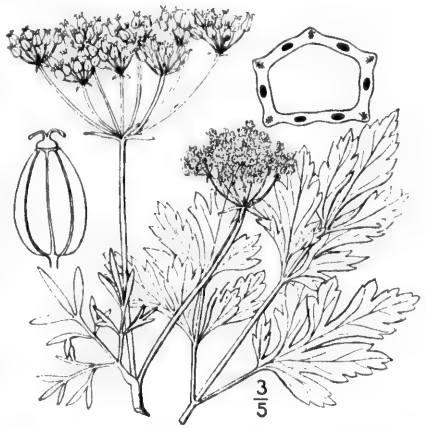
Leaf-segments broad.
  Flowers yellow. 1. *A. Petroselinum.*
  Flowers white. 2. *A. graveolens.*
Leaf-segments very narrow. 3. *A. leptophyllum.*

1. Apium Petroselinum L. Common or Garden Parsley. Ache. (Fig. 2687.)

Apium Petroselinum L. Sp. Pl. 264. 1753.
Petroselinum sativum Hoffm. Gen. Umb. 177. 1814.

Erect, usually biennial, 1°–3° high, much branched, glabrous. Leaves bipinnate, triangular in outline, the segments ovate, dentate, or incised, or those of the upper leaves linear-oblong and entire; umbels peduncled, 1′–2½′ broad, axillary and terminal, 15–20-rayed; rays 5″–12″ long; pedicels about 1½″ long; involucre of 2–4 linear bracts; bractlets of the involucels subulate; flowers greenish yellow; fruit ovate, glabrous, about 2″ long, the ribs rather prominent when dry.

Maryland to Ontario, escaped from cultivation. Introduced from Europe. Native of the Mediterranean region. Leaves of some cultivated forms crisped. Summer.

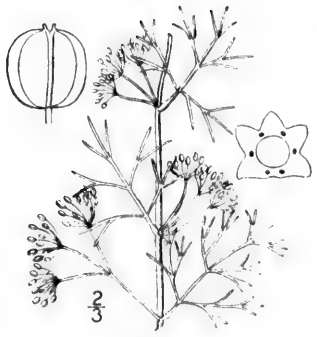


2. Apium graveòlens L. Celery. Smallage. (Fig. 2688.)

Apium graveolens L. Sp. Pl. 264. 1753.

Glabrous, stem erect, 1°–3° high, several-leaved. Leaves pinnate, the basal and lower ones long-petioled, the upper short-petioled, or nearly sessile; leaf-segments 3 or 5, stalked, or sessile, thin, broadly ovate to oval, coarsely toothed and often incised; ½′–1½′ long; umbels opposite the leaves, and terminal, 3–7-rayed; involucre and involucels small, or none; flowers very small, white, very short-pedicelled; fruit oval, scarcely ½″ long, the ribs somewhat winged; oil-tubes mostly solitary in the intervals and 2 on the commissural side.

In waste places, escaped from cultivation in southeastern Virginia, and naturalized in salt marshes on the coast of California. Also in ballast about the seaports. Native of Europe. Old English names Ache, Marsh Parsley, Mile. May–July.



3. Apium leptophýllum (DC.) F. Muell. Fine-leaved Marsh Parsley. (Fig. 2689.)

Sison Ammi L. Sp. Pl. 252. 1753?
Heliosciadium leptophyllum DC. Prodr. 4: 105. 1830.
Apium leptophyllum F. Muell. Benth. Fl. Austral. 3: 372. 1866.
A. Ammi Urban in Mart. Fl. Bras. 11: Part 1, 341. 1879.

Erect or diffuse, slender, much branched, 3′–24′ high. Leaves ternately pinnatisect, the lower slender-petioled, the uppermost nearly sessile, the ultimate segments narrow, often incised; umbels ½′–1½′ broad, sessile, or peduncled, opposite the leaves; flowers white; fruit ovate, glabrous, about 1″ long, the ribs equal and prominent.

In moist grounds, New Jersey; "St. Louis, Mo." (Nuttall). Common in the southern States. Widely distributed in tropical America and the Old World. June–Aug.

34. ZÍZIA Koch. Nov. Act. Caes. Leop. Acad. 12: 129. 1825.

Perennial mostly glabrous herbs, with ternate or ternately compound leaves, or the basal ones undivided as in *Thaspium*, and compound umbels of yellow flowers, the central fruit of each umbellet sessile. Involucre none; involucels of several small bracts. Calyx-teeth prominent. Stylopodium none. Styles elongated. Fruit ovoid, or oblong, glabrous, or nearly so, somewhat compressed, the ribs filiform, not winged; oil-tubes solitary in the intervals, with a small one under each rib. Seed-face flat. [In honor of I. B. Ziz, a Rhenish botanist.]

Three species, mainly distinguished from the *Thaspia* by their wingless fruit.

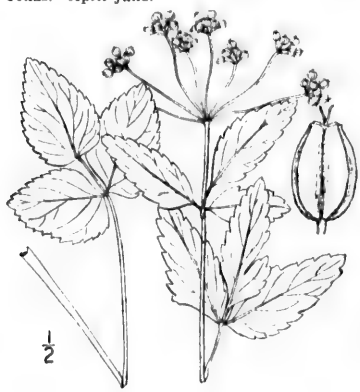
Basal leaves 2–3-ternately compound.
  Rays of the umbel numerous, stout; fruit 2″ long. 1. *Z. aurea.*
  Rays of the umbel 2–12, slender; fruit about 1″ long. 2. *Z. Bebbii.*
Basal leaves cordate, undivided; fruit about 1½″ long. 3. *Z. cordata.*

1. Zizia aùrea (L.) Koch. Early or Golden Meadow-Parsnip. (Fig. 2690.)

Smyrnium aureum L. Sp. Pl. 262. 1753.
Z. aurea Koch, Nov. Act. Caes. Leop. 12: 129. 1825.
Thaspium aureum var. *apterum* A. Gray, Man. Ed. 2, 156. 1856.

Erect, glabrous, branched, 1°–2½° high. Basal and lower leaves long-petioled, 2–3-ternately compound, the segments ovate, or ovate-lanceolate, acute, or obtusish at the apex, 1′–2′ long, sharply serrate; upper leaves shorter-petioled, ternate; rays of the umbels 9–25, stout, ascending, 1′–2′ long; fruit oblong, nearly 2″ long, about 1½″ wide.

In fields, meadows, and swamps, New Brunswick to Ontario, South Dakota, Florida and Texas. April–June.

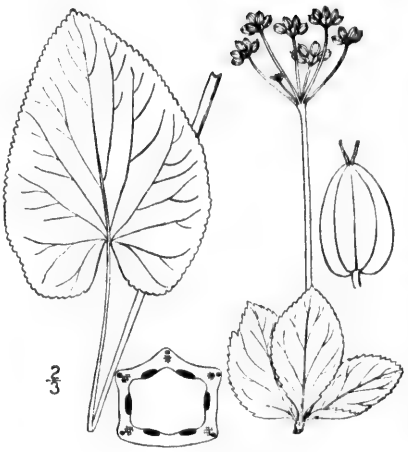


2. Zizia Bébbii (Coult. & Rose) Britton. Bebb's Zizia. (Fig. 2691.)

Zizia aurea var. *Bebbii* Coult. & Rose, Bot. Gaz. 12: 138. 1887.
Zizia Bebbii Britton, Mem. Torr. Club, 2: 35. 1890.

Slender, ascending, simple or branched, 1°–2° high. Basal and lower leaves slender-petioled, 2-3-ternate, the segments ovate, oblong, or oval, mostly obtuse, ½′–1′ long, sharply serrate; stem-leaves ternate, or biternate, short-petioled, or sessile, their segments lanceolate, generally narrower than those of the preceding species; rays of the umbel 2–12, slender, divergent, 1′–3′ long; fruit oval, or broader than long, about 1″ long, often 1¼″ wide.

In mountain woods, Virginia and West Virginia to North Carolina and Georgia. May.



3. Zizia cordàta (Walt.) DC. Heart-leaved Alexanders. (Fig. 2692.)

Smyrnium cordatum Walt. Fl. Car. 114. 1788.
Zizia cordata DC. Prodr. 4: 100. 1830.
Thaspium trifoliatum var. *apterum* A. Gray, Man. Ed. 2, 156. 1856.

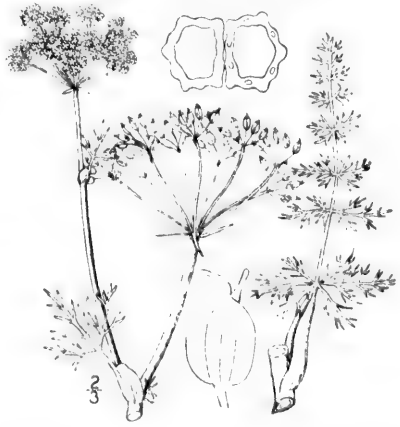
Stout, erect, branched, glabrous, or somewhat pubescent, 2°–3° high. Basal and lower leaves long-petioled, broadly ovate, or orbicular, undivided, deeply cordate at the base, sometimes 6′ long, crenate all around; stem-leaves shorter-petioled, ternate, or rarely quinate, the segments ovate, or oval, crenate, or lobed; rays of the umbel 7–16, ascending, 1′–2′ long; fruit ovate, or oval, about 1½″ long, and 1″ wide.

In woods, Connecticut to Minnesota and the Northwest Territory, south to Georgia, Missouri, Wyoming and Oregon. Ascends to 3500 ft. in Virginia. May–June.

35. CÀRUM L. Sp. Pl. 263. 1753.

Glabrous herbs, with pinnate or ternately pinnatifid leaves, and small white or yellowish flowers in terminal compound umbels. Calyx-teeth minute. Petals inflexed at the apex. Stylopodium conic; fruit ovate, or oblong, somewhat compressed, glabrous. Carpels somewhat 5-angled, the ribs filiform, or inconspicuous; oil-tubes solitary in the intervals and 2 on the commissural side. Seed dorsally flattened, its face flat or slightly concave. [Greek, caraway.]

About 50 species, natives of temperate and warm regions. Besides the following, about 4 others occur in western North America.



1. Carum Càrui L. Caraway. Carvies. (Fig. 2693.)

Carum Carui L. Sp. Pl. 263. 1753.

Biennial or sometimes perennial, erect, branching, 1°–2° high. Lower and basal leaves long-petioled, the uppermost nearly sessile, all pinnatisected into linear or filiform segments; bases of the petioles widely dilated; involucre of 1–3 linear bracts, or none; involucels commonly none; umbels 1′–2½′ broad, 7–10-rayed; rays ½′–2′ long in fruit; fruit oblong, usually slightly curved, about 2″ long, the ribs conspicuous when mature.

Occasional in waste places, Newfoundland to South Dakota, Pennsylvania and Colorado. Adventive from Europe. May–July.

36. CICÙTA L. Sp. Pl. 255. 1753.

Erect tall perennial glabrous herbs, with pinnate or pinnately compound leaves, and compound terminal umbels of white flowers. Involucre of few bracts, or none; involucels many-bracted. Calyx-teeth acute. Petals broad, the apex inflexed. Stylopodium short-conic; fruit ovate, or oblong, glabrous, slightly flattened laterally. Ribs corky, the lateral ones strongest; oil-tubes solitary in the intervals, 2 on the commissural side. Seed nearly terete. [The ancient Latin name.]

About 8 species, natives of the north temperate zone and Mexico. Besides the following about 4 others occur in western North America.

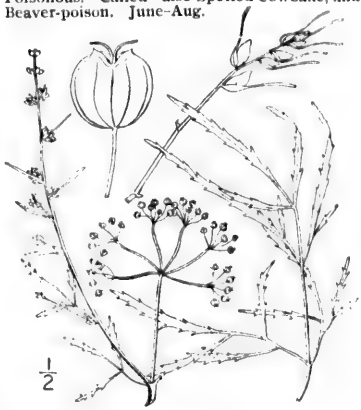
Leaf-segments lanceolate. 1. *C. maculata.*
Leaf-segments narrowly linear. 2. *C. bulbifera.*

1. Cicuta maculàta L. Water Hemlock. Musquash Root. (Fig. 2694.)

Cicuta maculata L. Sp. Pl. 256. 1753.
Cicuta virosa var. *maculata* Coult. & Rose, Rev. Umb. 130. 1888.

Stout, erect, branching, 3°–6° high, the stem marked with purple lines. Roots several, fleshy, tuberiform, ovoid, or oblong; leaves petioled, bipinnate, or tripinnate, the lower often 1° long, and on long petioles, the upper smaller; leaf-segments lanceolate, or lance-oblong, coarsely and sharply serrate, 1′–5′ long, their veins apparently ending in the notches; umbellets many-flowered; pedicels unequal, 2″–4″ long in fruit; fruit ovate, or oval, 1″–1½″ long.

In swamps and low grounds, New Brunswick to Manitoba, south to Florida and New Mexico. Poisonous. Called also Spotted Cowbane, and Beaver-poison. June–Aug.



2. Cicuta bulbífera L. Bulb-bearing Water Hemlock. (Fig. 2695.)

Cicuta bulbifera L. Sp. Pl. 255. 1753.

Erect, slender, much branched, 1°–3½° high. Roots few, fleshy, tuberiform. Leaves petioled, 2–3-pinnate, the upper ones less divided, smaller, and bearing numerous clustered bulblets in their axils; leaf-segments linear, sparingly serrate with distant teeth, ½′–1½′ long; fruit broadly ovate, slightly more than 1″ long, seldom formed along the southern range of the species.

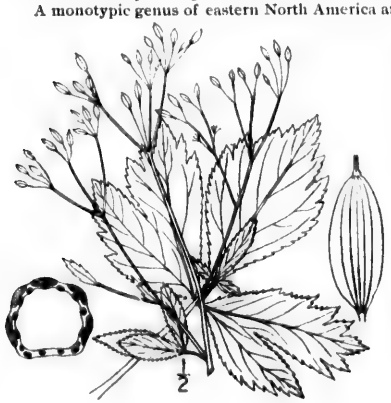
In swamps, Nova Scotia to Delaware, west to Manitoba, Indiana and Iowa. Ascends to 2600 ft. in the Catskills. July–Sept.

37. DÉRINGA Adans. Fam. Pl. 2: 498. 1763.

[CRYPTOTAENIA DC. Mem. Omb. 42. 1829.]

Perennial glabrous herbs, with 3-divided leaves, and compound irregular umbels of white flowers. Involucre and involucels none. Calyx-teeth obsolete. Petals inflexed at the apex. Stylopodium conic; fruit oblong, laterally compressed, glabrous. Carpels nearly terete, the ribs equal, obtuse; oil-tubes solitary in the intervals and also beneath each rib. Seed-face flat or nearly so. [Said to be named for Deering or Dering.]

A monotypic genus of eastern North America and Japan.



1. Deringa Canadénsis (L.) Kuntze. Honewort. (Fig. 2696.)

Sison Canadense L. Sp. Pl. 252. 1753.
C. Canadensis DC. Mem. Omb. 42. 1829.
D. Canadensis Kuntze, Rev. Gen. Pl. 266. 1891.

Erect, rather slender, freely branching, 1°–3° high. Lower and basal leaves long-petioled, 3-divided, the segments thin, ovate, acute or acuminate at the apex, sharply and irregularly serrate, incised, or sometimes lobed, 1′–4′ long, the lateral ones nearly sessile and oblique at the base, the terminal one abruptly narrowed into a margined incised stalk; upper leaves nearly sessile; umbels 4–10-rayed; fruit narrowed at both ends, 2″–3″ long, often curved.

In woods, New Brunswick to Minnesota, south to Georgia and Texas. Ascends to 4200 ft. in North Carolina. June–July.

38. SPERMÓLEPIS Raf. Neog. 2. 1825.

[LEPTOCAULIS Nutt.; DC. Mem. Omb. 39. 1829.]

Glabrous slender erect branching annuals, the branches often nearly filiform, with finely dissected petioled leaves the leaf-segments very narrowly linear. Flowers very small, white, in compound unequal-rayed umbels. Involucre none; involucels of a few small narrow bracts, or none. Calyx-teeth obsolete. Fruit ovate, laterally flattened, tuberculate or bristly; ribs prominent, or obsolete; pericarp thick; oil-tubes solitary in the intervals or also under the ribs, 2 on the commissural side. Stylopodium short, conic.

Two species, natives of the southern United States.

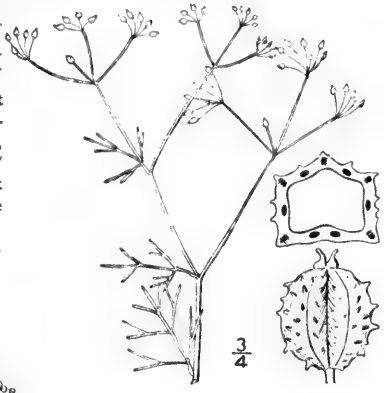
Fruit tubercled. 1. *S. divaricatus.*
Fruit covered with hooked bristles. 2. *S. echinatus.*

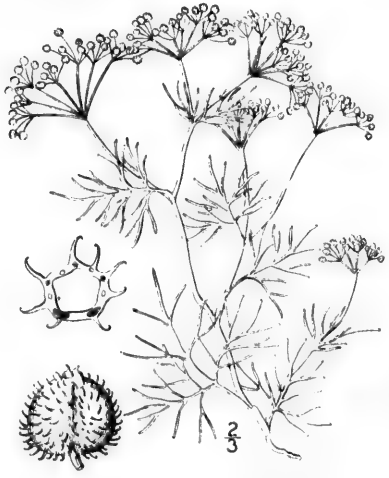
1. Spermolepis divaricàtus (Walt.) Britton. Rough-fruited Spermolepis. (Fig. 2697.)

Daucus divaricatus Walt. Fl. Car. 114. 1788.
Leptocaulis divaricatus DC. Mem. Omb. 39. *pl. 10.* 1829.
Apium divaricatum Wood, Bot. & Fl. 140. 1870.
Spermolepis divaricatus Britton, Mem. Torr. Club, 5: 244. 1894.

Similar to *Apiastrum patens* (fig. 2672) but more slender and still more widely branching. Rays of the umbels almost filiform, ½′–1½′ long, divaricate; flowers about ½″ broad; pedicels filiform, 3″–6″ long; fruit ovate, densely tuberculate, ½″ long; the ribs rather prominent.

Kansas to Texas, North Carolina and Florida. Also in ballast at Philadelphia. April–May.





2. Spermolepis echinàtus (Nutt.) Britton. Bristly-fruited Spermolepis. (Fig. 2698.)

Leptocaulis echinatus Nutt.; DC. Prodr. 4: 107. 1830.
Apium echinatum S. Wats. Bibl. Index, 1: 412. 1878.

Resembling the preceding species, but lower, seldom over 1° high, the branches ascending or sometimes spreading. Rays of the umbel very slender, 1½′ long, or less; fruit about ¼″ long, covered with spreading hooked bristles, the ribs obsolete, the commissure narrow.

Alabama to Missouri, Texas and California. April–May.

39. PTILÍMNIUM Raf. Neog. 2. 1825.

[DISCOPLEURA DC. Mem. Omb. 38. 1829.]

Annual erect glabrous branching herbs, with pinnately or ternately dissected leaves, and compound umbels of white flowers. Bracts of the involucre several, filiform or dissected in our species. Calyx-teeth obsolete. Petals obovate, the apex inflexed. Stylopodium conic; fruit ovate, slightly compressed, glabrous. Carpels dorsally compressed, the dorsal and intermediate ribs prominent, slender, the lateral ones very thick and corky; oil-tubes solitary in the intervals. Seed-face flat. [Greek, referring to the finely divided leaves.]

About 4 species. Besides the following, another occurs in Texas and one in the East Indies.

Involucral bracts mostly pinnate; fruit 1″–1½″ long. 1. *P. capillaceum.*
Involucral bracts short, entire; fruit ½″–¼″ long. 2. *P. Nuttallii.*

1. Ptilimnium capillàceum (Michx.) Hollick. Mock Bishop-weed. (Fig. 2699.)

Ammi majus Walt. Fl. Car. 113. 1788. Not L.
A. capillaceum Michx. Fl. Bor.Am. 1: 164. 1803.
D. capillacea DC. Mem. Omb. 38. 1829.
Ptilimnium capillaceum Hollick, Trans. N. Y. Acad. 13: 20. 1893.

Slender, 1°–2° high, the branches ascending or sometimes divaricate. Leaves finely dissected into filiform segments, the upper sessile, the lower more or less petioled; involucral bracts or some of them pinnately parted; involucels of several linear bracts; umbels 2′–4′ broad, 5–20-rayed, the rays 1′–2′ long; pedicels 2″–8″ long; fruit ovate, acute, 1″–1½″ long.

In wet soil, especially brackish meadows, along the coast, Massachusetts to Florida, extending west to Texas. June–Oct. Called also Herb William, Wood-nep, Bole- or Bull-wort.

2. Ptilimnium Nuttàllii (DC.) Britton. Nuttall's Mock Bishop-weed. (Fig. 2700.)

Peucedanum verticillatum Raf. Fl. Ludov. 81. 1817?
Discopleura Nuttallii DC. Mem. Omb. 38. 1829.
Discopleura capillacea var. *Nuttallii* Coult. & Rose, Bot. Gaz. 12: 292. 1887.
Ptilimnium Nuttallii Britton, Mem. Torr. Club, 5: 244. 1894.

Similar to the preceding species, but generally stouter, 2°–3° high, the branches nearly erect. Umbels 7–25-rayed; bracts of the involucre linear, entire, short, those of the involucels minute; fruit nearly orbicular, obtusish, about ½″ long.

In swamps, Illinois to Arkansas, Louisiana and Texas. May–Sept.

40. BÉRULA Hoffm.; Bess. Enum. Pl. Volh. 44. 1821.

A glabrous aquatic or marsh perennial, with pinnate leaves, serrate or sometimes incised leaf-segments, and terminal compound umbels of white flowers. Involucre and involucels of several narrow bracts. Calyx-teeth very small. Stylopodium conic; styles short. Fruit subglobose, slightly flattened laterally, glabrous, the ribs very slender, the pericarp thick and corky; oil-tubes numerous and close together along the inner side of the pericarp. Seed-face flat. [Latin name of the water cress.]

A monotypic genus of the north temperate zone.

1. Berula erécta (Huds.) Coville. Cut-leaved Water Parsnip. (Fig. 2701.)

Sium erectum Huds. Fl. Angl. 103. 1762.
Sium angustifolium L. Sp. Pl. Ed. 2, 1672. 1763.
Berula angustifolia Mert. & Koch, Deutsch. Flora, 2: 433. 1826.
B. erecta Coville, Contr. Nat. Herb. 4: 115. 1893.

Erect, rather stout, much branched, 6′–3° high. Leaflets 7–19, ovate, oval, or linear-oblong, deeply serrate, laciniate, or lobed, 6″–18″ long, 2″–5″ wide, those of the upper leaves commonly more laciniate than those of the lower; umbels numerous, short-peduncled, 10–20 rayed; rays ½′–2½′ long in fruit; pedicels 1½″–3″ long; fruit less than 1″ long, nearly orbicular, somewhat cordate at the base, the ribs inconspicuous.

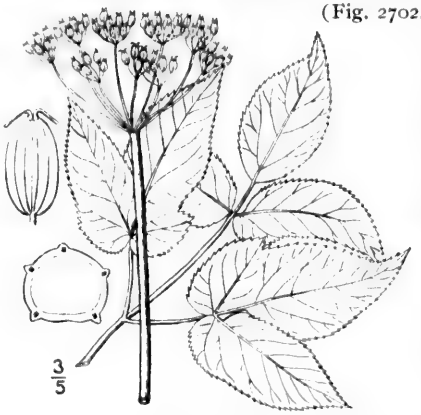
In swamps and streams, southern Ontario to British Columbia, south to Massachusetts (?) Illinois, Nebraska; in the Rocky Mountains to New Mexico and to California. Also in Europe and Asia. Called also Lesser or Narrow-leaved Water-Parsnip. July–Sept.

41. AEGOPÒDIUM L. Sp. Pl. 265. 1753.

Perennial herbs, with 1–2-ternate leaves, and compound umbels of white flowers. Bracts of the involucre and involucels none, or rarely few and early deciduous. Calyx-teeth obsolete. Petals inflexed at the apex. Stylopodium thick, conic. Fruit ovate-oblong, glabrous, somewhat compressed. Carpels obscurely 5-angled, the ribs slender, equal, distant; oil-tubes none. [Greek, goat-foot.]

One or perhaps two species, natives of temperate Europe and Asia.

1. AEgopodium Podagrària L. Goutweed. Goutwort. Herb-Gerard. (Fig. 2702.)



AEgopodium Podagraria L. Sp. Pl. 265. 1753.

Erect, branched, glabrous, 1½°–2½° high. Basal and lower leaves long-petioled, biternate, the primary divisions stalked, the segments ovate, acute, or acuminate at the apex, rounded, or cordate and often oblique at the base, sharply serrulate, 1½′–3′ long; upper leaves similar but smaller and usually simply ternate; umbels long-peduncled, 1½′–2½′ broad, 9–25-rayed: rays 1′ long in fruit or more; pedicels 2″–4″ long; fruit about 2″ long, scarcely 1″ wide, the styles deflected.

In waste places, Massachusetts to New Jersey, Pennsylvania and Delaware. Adventive from Europe. Wild or English Masterwort, Ax-Ash- or Aise-weed, Dwarf or Bishop's Elder, Bishop's weed. June–Aug.

42. HYDROCÓTYLE L. Sp. Pl. 234. 1753.

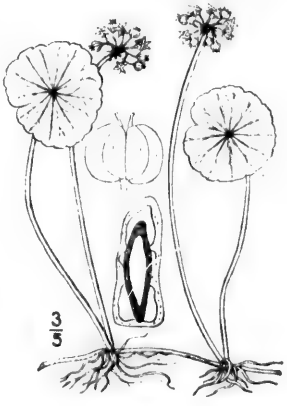
Perennial herbs, prostrate and commonly rooting at the joints, with palmately lobed or veined, often peltate leaves, the bases of the petioles with 2 scale-like stipules, and small white flowers in peduncled or sessile simple or proliferous umbels opposite the leaves. Bracts of the involucre few and small, or none. Calyx-teeth minute. Petals entire. Disk flat. Fruit laterally compressed, orbicular or broader than high. Carpels with 5 primary ribs, the lateral ones usually curved; no large oil-tubes, but an oil-bearing layer of tissue beneath the epidermis. [Greek, water-cup.]

About 75 species of wide distribution. Besides the following another occurs in the Southwest and on the Pacific Coast. The species are known as Marsh-, or Water-Pennywort, or Water-cup.

Leaves nearly orbicular, peltate.
- Umbels simple, rarely slightly proliferous; pedicels slender. 1. *H. umbellata.*
- Umbels, at least some of them, proliferous; pedicels, or some of them, short.
  - Fruit notched at each end. 2. *H. Canbyi.*
  - Fruit not notched at either end. 3. *H. verticillata.*

Leaves nearly orbicular, cordate, or reniform, not peltate.
- Leaves 5-9-lobed; umbels nearly sessile. 4. *H. Americana.*
- Leaves 3-7-cleft; umbels long-peduncled. 5. *H. ranunculoides.*

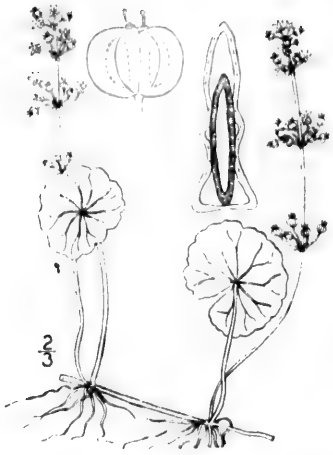
1. Hydrocotyle umbellàta L. Umbellate or Many-flowered Marsh-Pennywort. (Fig. 2703.)



Hydrocotyle umbellata L. Sp. Pl. 234. 1753.

Glabrous, stem creeping, several inches long, the subterranean branches tuberiferous. Petioles slender, erect, or ascending, 1′–6′ long; leaves peltate, orbicular, or broader than long, sometimes cordate at the base, ½′–2′ wide, crenately 7-11-lobed, the lobes broad, not deep, mostly crenulate; peduncles elongated; umbels simple or rarely with a proliferous extension; pedicels slender, 2″–6″ long; mature fruit notched at both ends, 1″–1½″ broad, not quite as long; intermediate ribs corky-thickened; dorsal rib obtuse.

In swamps and low grounds, eastern Massachusetts to Florida and the West Indies, Minnesota, Texas and Mexico. Also in South America and South Africa. June–Sept.



2. Hydrocotyle Cánbyi C. & R. Canby's Marsh-Pennywort. (Fig. 2704.)

Hydrocotyle umbellata var. *ambigua* A. Gray, Man. Ed. 5, 190. 1867. Not *H. ambigua* Pursh, 1814. *Hydrocotyle Canbyi* Coult. & Rose, Bot. Gaz. 12: 103. 1887.

Stems creeping, sometimes 12′ long, the subterranean branches tuberiferous. Petioles short, or elongated; leaves peltate, orbicular or nearly so, ½′–1½′ wide, with 7–11 shallow broad mostly crenulate lobes; peduncles elongated; inflorescence mostly proliferous, rarely simply umbellate; verticils 3–10-flowered; pedicels 1″–2″ long, or some of them rarely 4″ long; fruit about 1″ long and 2″ broad, slightly notched at both ends when mature, much flattened, the intermediate ribs corky-thickened, the dorsal one very obtuse.

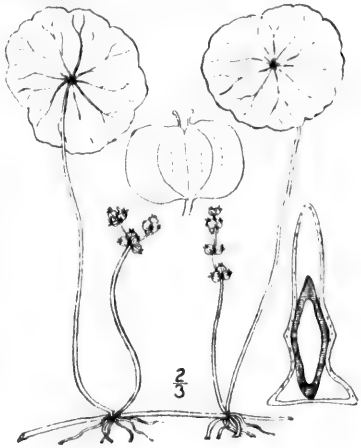
In moist ground, New Jersey to Florida. Appearing in some respects intermediate between the preceding species and the next. June–Sept.

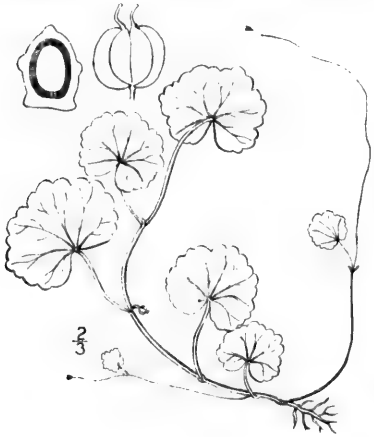
3. Hydrocotyle verticillàta Thunb. Whorled Marsh-Pennywort. (Fig. 2705.)

Hydrocotyle verticillata Thunb. Diss. 2: 415. *pl.* 3. 1798. *Hydrocotyle interrupta* Muhl. Cat. 30. 1813.

Similar to the two preceding species. Inflorescence always proliferous, 1′–2′ long; verticils 2–6-flowered; pedicels very short, usually less than ½″ long; fruit about 1″ long, 1½″–2″ broad, rounded or truncate at each end, not notched; intermediate ribs of the carpels filiform, not corky-thickened, the dorsal one acute.

In moist soil, Massachusetts to Florida, mainly near the coast, west to Texas and southern California, and in Central and South America. June–Sept.





4. Hydrocotyle Americàna L. American Marsh-Pennywort. (Fig. 2706.)

Hydrocotyle Americana L. Sp. Pl. 234. 1753.

Stems filiform, creeping, often bearing small tubers; petioles rather short, seldom over 2′ long; leaves membranous, reniform, not peltate, deeply cordate, 1′–2′ wide, with 9–13 shallow crenulate lobes; umbels sessile or very nearly so at the nodes, 1–5-flowered; pedicels less than 1″ long; fruit slightly more than ¼″ broad and nearly as high, the ribs all filiform.

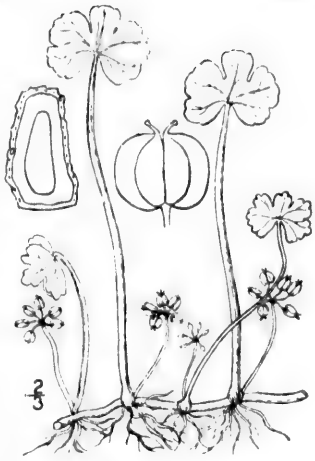
In wet places, Nova Scotia to Ontario and Minnesota, south to southern New York, Pennsylvania, and in the mountains to North Carolina. Ascends to 3000 ft. in Virginia. June–Sept.

5. Hydrocotyle ranunculoides L. f. Floating Marsh-Pennywort. (Fig. 2707.)

Hydrocotyle ranunculoides L. f. Suppl. 177. 1781.
Hydrocotyle natans T. & G. Fl. N. A. 1: 599. 1840.

Stem usually floating, sometimes creeping on shores, rather stout, abundantly rooting from the nodes, branched, 6′–24′ long. Petioles elongated, weak; leaves reniform, 1′–2′ wide, not peltate, 3–7-cleft, deeply cordate at the base, the lobes crenate; peduncles 1′–3′ long, much shorter than the petioles, recurved in mature fruit; umbels simple, 5–10-flowered; fruit nearly orbicular, about 1¼″ broad, the ribs obscure and filiform.

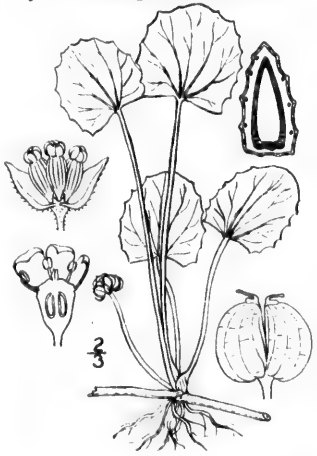
In ponds and swamps, eastern Pennsylvania to Florida, near the coast, west to Texas and on the Pacific Coast from Oregon to Lower California. Also in Central and South America, Abyssinia and Italy. June–Sept.



43. CENTÉLLA L. Sp. Pl. Ed. 2, 1393. 1763.

Perennial herbs (some African species shrubby), ours with prostrate stems rooting and sending up tufts of long-petioled leaves at the nodes, together with 1–3 long-rayed umbellets of small white flowers, the true umbel sessile. Petiole-bases sheathing. Bracts of the involucels 2–4, mostly prominent. Calyx-teeth none. Disk flat, or slightly concave. Styles filiform. Fruit somewhat flattened laterally, orbicular, reniform, or obcordate, rather prominently ribbed, the ribs mostly anastomosing; oil-tubes none. [Latin, diminutive of *centrum*, a prickle.]

About 20 species, of wide distribution, most abundant in South Africa. The following is the only one occurring in North America.



1. Centella Asiática (L.) Urban. Ovate-leaved Marsh-Pennywort. (Fig. 2708.)

Hydrocotyle Asiatica L. Sp. Pl. 234. 1753.
Hydrocotyle repanda Pers. Syn. 1: 302. 1805.
Centella Asiatica Urban in Mart. Fl. Bras. 11: Part. 1, 287. 1879.

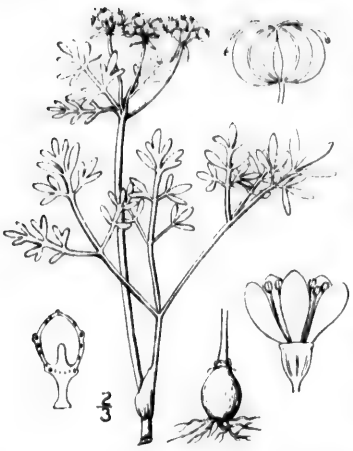
Stem creeping, glabrous or somewhat pubescent, 1′–6′ long. Petioles 3′–12′ long, sometimes pubescent; blades ovate, rather thick, very obtuse and rounded at the apex, broadly cordate at the base, not peltate, 1′–1½′ long, 9″–15″ wide, repand-dentate; pedicels much shorter than the leaves, ½′–2′ long; umbels capitate, 2–4-flowered, subtended by 2 ovate bracts; flowers nearly sessile; fruit 2″–2½″ broad, about 1½″ high, prominently ribbed and reticulated when mature.

In wet grounds, Maryland to Florida, west to Texas. Also in tropical America, Asia, Africa and Australia. June–Sept.

44. ERIGENÌA Nutt. Gen. 1: 187. 1818.

Low glabrous nearly acaulescent perennial herbs, arising from a deep tuber, with ternately decompound leaves, usually a single-leaved involucre, and small umbels of white flowers. Calyx-teeth obsolete. Petals flat, obovate or spatulate, entire. Fruit nearly orbicular, notched at both ends, glabrous. Carpels incurved at top and bottom, with 5 slender ribs and 1–3 small oil-tubes in the intervals. [Greek, spring-born.]

A monotypic genus of central North America.



1. Erigenia bulbòsa (Michx.) Nutt. Harbinger of Spring. (Fig. 2709.)

Sison bulbosum Michx. Fl. Bor. Am. 1: 169. 1803.

Erigenia bulbosa Nutt. Gen. 1: 188. 1818.

Stem scapose, 3′–9′ high, bearing a leaf involucrate to the umbel. Basal leaves 2–4, petioled, ternately divided into thin oblong obtuse segments, the involucral one similar, smaller, short-petioled; petioles much dilated and sheathing at the base; umbels mostly compound, of 1–4 slender rays; involucels spatulate or sometimes foliaceous; pedicels very short in flower, 1″–2½″ long in fruit; fruit about 1″ long and 1½″ broad.

Ontario to western Pennsylvania, the District of Columbia and Alabama, west to Minnesota, Kansas and Missouri. Feb.–April.

Family 92. **CORNÀCEAE** Link. Handb. 2: 2. 1831.

DOG-WOOD FAMILY.

Shrubs or trees, with simple opposite, verticillate or alternate, usually entire leaves, and regular perfect polygamous or dioecious flowers in cymes, heads or rarely solitary. Calyx-tube adnate to the ovary, its limb 4–5-dentate, or none. Petals generally 4 or 5, sometimes wanting, valvate or imbricate. spreading, inserted at the base of the epigynous disc. Stamens as many as the petals or more numerous, inserted with them; filaments subulate or flat. Ovary inferior, 1–2-celled in our species; style 1, short or elongated; ovules 1 in each cavity, pendulous, anatropous. Fruit a drupe, the stone 1–2-celled, 1–2-seeded. Seeds oblong; embryo nearly as long as the endosperm; cotyledons foliaceous.

About 16 genera and 85 species, most abundant in the northern hemisphere.

Flowers perfect, 4-parted; ovary 2-celled. 1. *Cornus.*
Flowers polygamous or dioecious; petals minute or none; ovary 1-celled. 2. *Nyssa.*

1. CÓRNUS L. Sp. Pl. 117. 1753.

Shrubs or trees, with simple mostly entire opposite verticillate or rarely alternate leaves, and small white greenish or purple flowers, in cymes, or heads, the latter involucrate with large white bracts in our species. Calyx-tube top-shaped or campanulate, its limb minutely 4-toothed. Petals 4, valvate. Stamens 4. Ovary 2-celled; stigma truncate or capitate; ovules 1 in each cavity. Drupe ovoid or globular, the stone 2-celled and 2-seeded. [Greek, horn, from the toughness of the wood.]

About 25 species, natives of the north temperate zone, Mexico and Peru. Besides the following, 7 others occur in western North America.

* Flowers capitate, with an involucre of 4-6 large white bracts.

Low herbaceous shrubs; rootstocks slender.
  Upper leaves verticillate; flowers greenish. 1. *C. Canadensis.*
  Leaves all opposite; flowers purple. 2. *C. Suecica.*
Tree or large shrub; flowers greenish. 3. *C. florida.*

** Flowers cymose, not involucrate.

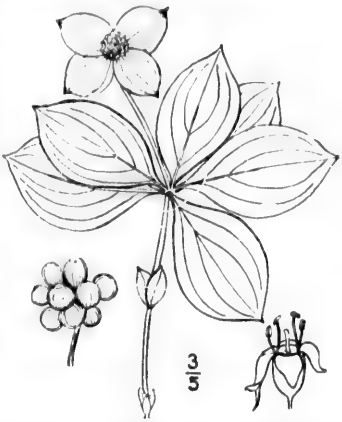
Leaves opposite.
  Leaves downy-pubescent beneath, at least when young; (sometimes glabrate in No. 5).
    Leaves broadly ovate or orbicular; fruit blue. 4. *C. circinata.*
    Leaves ovate or ovate-lanceolate.
      Fruit blue; stone pointed at the base. 5. *C. Amomum.*
      Fruit white; stone globose, more or less broader than high. 6. *C. asperifolia.*
      Fruit white; stone compressed, much broader than high. 7. *C. Baileyi.*
  Leaves glabrate, or minutely pubescent beneath.
    Leaves ovate, short-pointed; twigs purple. 8. *C. stolonifera.*
    Leaves ovate-lanceolate, acuminate.
      Fruit white; twigs grey. 9. *C. candidissima.*
      Fruit pale blue; twigs reddish. 10. *C. stricta.*
Leaves alternate, clustered at the ends of the flowering branches. 11. *C. alternifolia.*

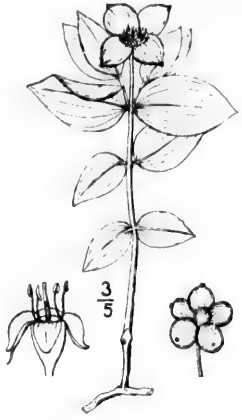
1. Cornus Canadénsis L. Low or Dwarf Cornel. Bunch-berry. (Fig. 2710.)

Cornus Canadensis L. Sp. Pl. 117. 1753.

Herbaceous, woody only at the base, flowering stems erect, scaly, 3′–9′ high. Rootstock nearly horizontal; leaves verticillate at the summit of the stem, or sometimes 1 or 2 pairs of opposite ones below, sessile, oval, ovate, or obovate, pinnately veined, glabrous or minutely appressed-pubescent, acute at each end, entire, 1′–3′ long; peduncle slender, ½′–1½′ long; involucral bracts 4–6, white, petaloid, ovate, 4″–9″ long; flowers greenish, capitate; petals ovate, one of them with a subulate appendage; fruit globose, bright red, about 3″ in diameter; stone smooth, globose, slightly longer than broad.

In low woods, Newfoundland to Alaska, New Jersey, Ohio, Indiana, Minnesota, Colorado and California. Rarely the upper leaves are opposite. Ascends to 5100 ft. in the Adirondacks. May–July.





2. Cornus Suècica L. Northern Dwarf Cornel. (Fig. 2711.)

Cornus Suecica L. Sp. Pl. 118. 1753.

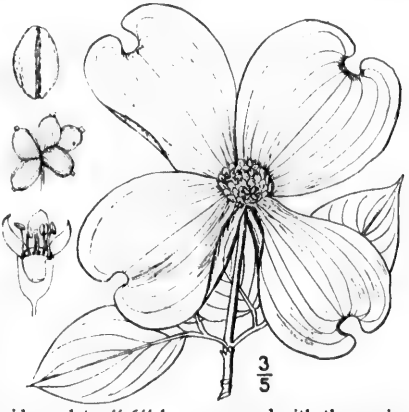
Flowering stems 2′–10′ high, sometimes branched above. Rootstock horizontal. Leaves 3–6 pairs, all opposite, sessile, ovate, or oval, acute or obtusish at the apex, mostly rounded at the base, entire, minutely appressed-pubescent above, the upper ½′–1½′ long, the lower smaller, the veins all arising from near the base; involucral bracts usually 4, ovate, 3″–6″ long, obtusish; flowers dark purple, capitate; fruit globose, red, 3″–4″ in diameter; stone flattened, slightly channeled on each side, about as broad as long.

In cold, wet woods, Labrador, Newfoundland and Quebec through Arctic America to Alaska. Also in northern Europe and Asia. July–Aug.

3. Cornus flórida L. Flowering Dogwood. (Fig. 2712.)

Cornus florida L. Sp. Pl. 117. 1753.

A small tree, or large shrub, with very rough bark and spreading branches, reaching a maximum height of about 40° and trunk diameter of 1½°. Leaves petioled, ovate, or oval, rarely obovate, entire, pale and slightly pubescent on the veins beneath, dark green and glabrous, or minutely pubescent above, 3′–6′ long, acute at the apex, usually narrowed at the base; petioles 3″–10″ long; bracts of the involucre white or pinkish (rarely rose-red), very conspicuous, obovate, obcordate, or emarginate, strongly parallel-veined, 1′–2½′ long; flowers greenish-yellow, capitate; fruit ovoid, scarlet, 5″–6″ long, crowned with the persistent calyx; stone smooth, channeled, ovoid, 3″–4″ long.



In woods, Maine and Ontario to Florida, Kentucky, Missouri and Texas. Ascends to 4400 ft. in Virginia. Wood hard, brown; weight per cubic foot 50 lbs. Leaves bright red in autumn. Fruit often persistent over winter. Called also Arrow-wood, Box-wood, Cornelian Tree. April–June.

4. Cornus circinàta L'Her. Round-leaved Cornel or Dogwood. (Fig. 2713.)

Cornus rugosa Lam. Encycl. 2: 115. 1786?
C. circinata L'Her. Cornus, 7. *pl. t.* 1788.

A shrub, 3°–10° high, the twigs warty, green and glabrous. Leaves petioled, entire, broadly ovate, orbicular, or even wider than long, acute, or short-acuminate at the apex, mostly rounded or truncate at the base, pale and densely soft-pubescent beneath, slightly pubescent above, 2′–6′ long; petioles 3″–9″ long; flowers white in rather dense cymes 1½′–2½′ broad, the pedicels usually somewhat pubescent; petals ovate; fruit globose, light blue, about 2½″ in diameter; stone subglobose, somewhat ridged, sometimes broader than high.

In shady, often rocky situations, Nova Scotia to Manitoba, south to Virginia, Illinois and Iowa, and Missouri (according to Tracy). May–June.

6. Cornus asperifòlia Michx. Rough-leaved Cornel or Dogwood. (Fig. 2715.)

C. asperifolia Michx. Fl. Bor. Am. 1: 93. 1803.
Cornus Drummondii C. A. Meyer, Mem. Acad. Petersb. (VI). 5: 210. 1845.

A shrub, 3°–15° high, the twigs reddish brown, the youngest very rough-pubescent. Leaves very slender-petioled, ovate-oval, or elliptic, acuminate at the apex, mostly obtuse at the base, pale and woolly-pubescent beneath, densely rough-pubescent above, 1½′–5′ long; petioles and rays of the cyme rough-pubescent; cymes rather loosely-flowered, 2′–3′ broad; petals white, oblong-lanceolate; fruit globose, white, about 3″ in diameter; stone slightly furrowed, little compressed, often oblique, more or less broader than high.

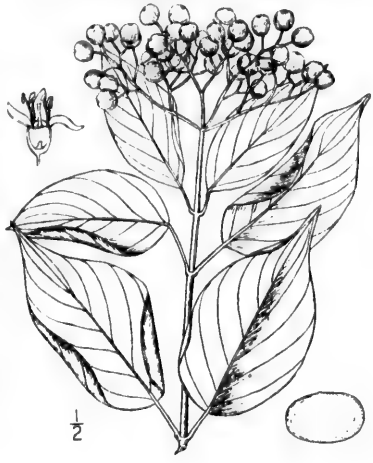
In wet ground, or near streams, southern Ontario to Florida, west to Iowa, Kansas and Texas. The southeastern plant (*C. asperifolia*) may be distinct from the western (*C. Drummondii.*) May–June.

5. Cornus Amònum Mill. Silky Cornel. Kinnikinnik. (Fig. 2714.)

C. Amomum Mill. Gard. Dict. Ed. 8, No. 5. 1768.
Cornus sericea L. Mant. 2: 199. 1771.

A shrub, 3°–10° high, with purplish twigs, the youngest commonly pubescent. Leaves petioled, ovate, oval, or ovate-lanceolate, acuminate at the apex, narrowed or rounded at the base, usually finely pubescent with brownish hairs beneath, glabrous or minutely appressed-pubescent above, 1′–5′ long; flowers white, in rather compact flat cymes 1½′–2½′ broad; petals narrowly oblong; fruit globose, light blue, 3″–3½″ in diameter, stone oblique, ridged, narrowed or pointed at base, sometimes slightly broader than long.

In low woods and along streams, New Brunswick to Ontario and Dakota, Florida, Nebraska and Texas. Swamp Dogwood. May-July.

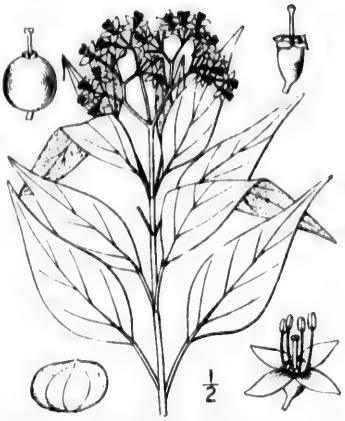


7. **Cornus Baileyi** Coult. & Evans. Bailey's Cornel or Dogwood. (Fig. 2716.)

Cornus Baileyi Coult. & Evans, Bot. Gaz. **15**: 37. 1890.

A shrub with reddish twigs, much resembling the preceding species. Leaves slender-petioled, ovate or ovate-lanceolate, acute or acuminate at the apex, narrowed or rounded at the base, glabrate, or with finely appressed soft pubescence above, rather densely woolly-pubescent beneath, 1′–5′ long; petals white, ovate-oblong; cymes compact, 1′–2′ broad, the rays pubescent; fruit white, about 3″ in diameter; stone flattened, slightly oblique, channeled on the edge, much broader than high.

Lake shores and in moist ground, Presque Isle, Pennsylvania to Minnesota and the Northwest Territory, Wyoming (and Nebraska?). May–June.

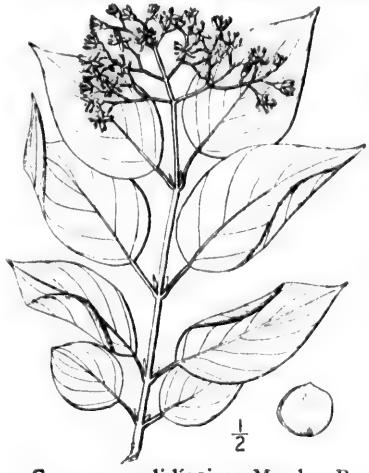


8. **Cornus stolonifera** Michx. Red-osier Cornel or Dogwood. (Fig. 2717.)

C. alba Lam. Encycl. **2**: 115. 1786. Not L. 1767.
C. stolonifera Michx. Fl. Bor. Am. **1**: 92. 1803.

A shrub, 3°–15° high, usually stoloniferous, the twigs glabrous and bright reddish purple, or the youngest finely appressed-pubescent. Leaves slender-petioled, ovate, ovate-lanceolate or oval, acute or short-acuminate at the apex, rounded or narrowed at the base, finely appressed-pubescent above, white or whitish and sparingly pubescent beneath, or sometimes glabrous on both sides, 1′–5′ long; cymes 1′–2′ broad, flat-topped, usually minutely appressed-pubescent; petals white, ovate-oblong; fruit white or whitish, globose, 3″–4″ in diameter, the stone very variable in shape, either higher than broad or broader than high.

In moist soil, New Brunswick and Nova Scotia to British Columbia, south to Virginia, Kentucky, Nebraska, Arizona and California. Ascends to 2400 ft. in the Adirondacks. June–July.



9. **Cornus candidissima** Marsh. Panicled Cornel or Dogwood. (Fig. 2718.)

Cornus candidissima Marsh, Arb. Am. 35. 1785.
Cornus paniculata L'Her. Cornus, 9. *pl. 15.* 1788.

A shrub, 6°–15° high, with gray smooth twigs, even the youngest glabrous or nearly so. Leaves petioled, lanceolate or ovate-lanceolate, long-acuminate at the apex, acute at the base, minutely appressed-pubescent on both sides, pale beneath, 1½′–4′ long; cymes loosely flowered, somewhat paniculate, the rays mostly glabrous; petals white, lanceolate; fruit globose, or slightly depressed, white, about 3″ in diameter; stone subglobose, slightly furrowed, or somewhat broader than high.

In rich soil, Maine (and Ontario?) to North Carolina, west to Minnesota and Nebraska. May–June.

10. Cornus stricta Lam. Stiff Cornel or Dogwood. (Fig. 2719.)

Cornus stricta Lam. Encycl. 1: 16. 1786.

Cornus fastigiata Michx. Fl. Bor. Am. 1: 92. 1803.

A shrub, 8°–15° high, resembling the preceding species, the twigs purplish or reddish brown. Leaves petioled, ovate or ovate-lanceolate, acute or acuminate at the apex, narrowed or sometimes rounded at the base, sparingly and finely appressed-pubescent on both sides, 1½′–3′ long, the margins often minutely denticulate, green above and beneath; cymes rather loosely flowered, 1½′–2½′ broad, their rays nearly or quite glabrous; petals white, ovate-lanceolate, or oblong; fruit pale blue, about 3″ in diameter; stone globose, nearly smooth.

In swamps, Virginia to Georgia and Florida. April–May.

11. Cornus alternifòlia L. f. Alternate-leaved Cornel or Dogwood. (Fig. 2720.)

Cornus alternifolia L. f. Suppl. 125. 1781.

A shrub, or small tree, with smooth greenish bark, reaching a maximum height of about 30° and trunk diameter of 8′. Leaves slender-petioled, alternate, often clustered near the ends of the branches, oval or ovate, acuminate at the apex, narrowed or sometimes rounded at the base, 2′–4′ long, pale and appressed-pubescent beneath, glabrate above, the margins minutely denticulate; petioles ½′–1¼′ long; cymes 2′–4′ broad, pubescent; petals white, or cream-color, lanceolate; fruit globular, or slightly depressed, blue, about 4″ in diameter; stone somewhat obovoid, channeled, scarcely flattened.

... woods, Nova Scotia and New Brunswick to Georgia, west to Ontario, Minnesota and Alabama. Ascends to 2500 ft. in Virginia. Wood hard, reddish brown; weight per cubic foot 42 lbs. May–July.

2. NÝSSA L. Sp. Pl. 1058. 1753.

Trees or shrubs, with alternate petioled entire or dentate leaves. Flowers small, greenish, polygamo-dioecious, in capitate clusters, short racemes, or the fertile ones sometimes solitary, borne at the summit of slender axillary peduncles, appearing with the leaves. Staminate flowers numerous, the calyx small, 5-parted, the petals minute and fleshy, or none; stamens 5–15; filaments slender; disk entire or lobed; pistil none or rudimentary. Pistillate flowers 2–4, or solitary, bracted; calyx-limb 5-toothed, or truncate; petals minute and fleshy, or none; stamens several, or commonly abortive; ovary 1-celled, with 1 pendulous ovule; style slender, recurved, stigmatic along one side near the apex. Drupe ovoid or oval, the stone bony, compressed, ridged or terete, 1-seeded. [Name of a water nymph.]

About 7 species, natives of eastern North America, eastern and central Asia. Besides the following, another occurs in the southern States.

Leaves usually entire; pistillate flowers 2–14; fruit 3″–7″ long.
- Leaves mostly acute or acuminate; stone little flattened. — 1. *N. sylvatica.*
- Leaves mostly obtuse; stone much flattened. — 2. *N. biflora.*

Leaves usually dentate; pistillate flower solitary; fruit 8″–15″ long. — 3. *N. aquatica.*

1. Nyssa sylvática Marsh. Pepperidge. Sour Gum. Tupelo. (Fig. 2721.)

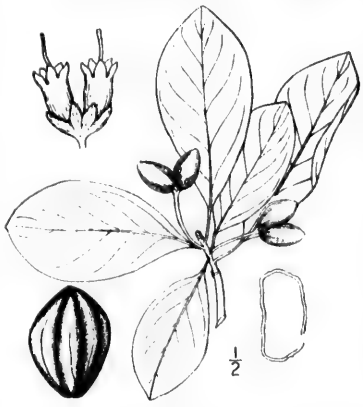
Nyssa sylvatica Marsh. Arb. Am. 97. 1785.
Nyssa multiflora Wang. Holz. 46. *pl. 16.* 1787.

A large tree, with rough bark, reaching a maximum height of 110° and trunk diameter of 5°; branches horizontal, especially when the tree is young. Leaves obovate or oval, acute, acuminate, or obtuse at the apex, usually narrowed at the base, entire, glabrous and shining above, more or less pubescent beneath, 2′–4′ long; petioles 4″–7″ long; staminate flowers in compound capitate clusters; pistillate flowers larger, 2–12 together; fruit ovoid, nearly black, 4″–7″ long, acid; stone ovoid, more or less flattened and ridged.

In rich soil, most abundant in swamps, Maine and Ontario to Florida, Michigan and Texas. Leaves crimson in autumn, rarely angulate-toothed on young trees. Wood soft, tough, light yellow; weight per cubic foot 40 lbs. Called also Black Gum. April–June.

2. Nyssa biflòra Walt. Southern Tupelo. Water Tupelo. (Fig. 2722.)

Nyssa biflora Walt. Fl. Car. 253. 1788.
Nyssa sylvatica var. *biflora* Sargent, Sylva, 5: 76. *pl. 218.* 1893.



Similar to the preceding species, the base swollen. Leaves mostly smaller and narrower, oval, oblong or obovate, entire, obtuse, or sometimes acute at the apex, narrowed or rounded at the base, 1′–5′ long, rarely more than 1½′ wide, glabrous when mature, sometimes loosely pubescent when young; staminate flowers in compound or simple cymes; pistillate flowers only 1–3 together; fruit oval, or subglobose, 3″–6″ long, acid; stone oval or oblong, distinctly flattened and furrowed.

In swamps and along ponds, New Jersey (according to Coulter and Evans); Virginia to Florida and Alabama. April–May. Perhaps intergrades with the preceding species. Opinions differ as to whether the name *aquatica* belongs more properly to this species or the following, both having been included in one species by Linnaeus.

3. Nyssa aquática L. Large Tupelo. Cotton or Tupelo Gum. (Fig. 2723.)

Nyssa aquatica L. Sp. Pl. 1058. 1753.
Nyssa uniflora Wang. Am. 83. *pl. 27. f. 57.* 1787.

A large tree, reaching a maximum height of about 100° and trunk diameter of 4°. Leaves slender-petioled, ovate or oval, angular-dentate, or entire, acute, or acuminate at the apex, rounded, often cordate, sometimes narrowed at the base, downy-pubescent beneath, especially when young, becoming glabrate on both sides, 3′–10′ long; staminate flowers in compound capitate clusters; pistillate flower larger, solitary; fruit oval, dark blue when ripe, 8″–15″ long; stone narrowly obovate, flattened, spongy, with several sharp longitudinal ridges.

In swamps, southern Virginia to Florida, west to Illinois, Missouri and Texas. Wood soft, tough, light brown, or nearly white; weight per cubic foot 29 lbs. April.

Series 2. *Gamopétalae.*

Petals partly or wholly united, rarely separate or wanting.

This series is also known as Sympetalae and has been called Monopetalae. The coherence of the petals is sometimes very slight or they are quite separate, as in Clethraceae, Pyrolaceae, some Ericaceae, Primulaceae, Styracaceae, Asclepiadaceae, Oleaceae, Cucurbitaceae and *Galax* in Diapensiaceae. From this condition the coherence varies through all stages to the tubular or funnelform corollas of some Convolvulaceae, Caprifoliaceae and Compositae. In American species of *Fraxinus* (Oleaceae) and in *Glaux* (Primulaceae), there is no corolla.

Family 1. **CLETHRÀCEAE** Klotsch, Linnaea, **24**: 12. 1851.

White-Alder Family.

Shrubs or trees, more or less stellate-canescent, with alternate deciduous serrate or serrulate petioled leaves, in our species, and rather small white fragrant flowers in terminal solitary or clustered narrow usually elongated racemes. Calyx 5-cleft or 5-parted, persistent, the segments imbricated. Petals 5, slightly united at the base, obovate, oblong, or obcordate, imbricated, deciduous. Stamens 10; filaments slender; anthers sagittate, inverted in anthesis, the sacs opening by large apical pores; pollen-grains simple. Disk obsolete. Ovary 3-angled or 3-lobed, 3-celled, pubescent; ovules numerous; style slender; stigmas 3 in our species. Capsule subglobose, or 3-lobed, 3-celled, loculicidally 3-valved, the valves at length 2-cleft.

The family consists only of the following genus, comprising about 30 species, natives of eastern North America, Japan, Mexico and South America.

1. CLÈTHRA L. Sp. Pl. 396. 1753.

Characters of the family. [Greek, alder, from the resemblance of the foliage.]

The following are the only species known in North America.

Leaves obovate, acute or obtuse; filaments glabrous. 1. *C. alnifolia.*
Leaves oval or ovate, acuminate; filaments hirsute. 2. *C. acuminata.*

1. Clethra alnifòlia L. Sweet Pepperbush. White Alder. (Fig. 2724.)

Clethra alnifolia L. Sp. Pl. 396. 1753.

A shrub, 3°–10° high, the twigs minutely canescent. Leaves obovate, obtuse or acute at the apex, narrowed or cuneate at the base, sharply serrate, at least beyond the middle, glabrous or very nearly so and green on both sides, 1′–3′ long; petioles 1″–6″ long; bracts short, deciduous; pedicels, calyx and capsule canescent; calyx-lobes oblong, obtuse, nerved; flowers about 4″ broad, of spicy fragrance; filaments glabrous; style longer than the stamens; capsule subglobose, about 1½″ in diameter about the length of the calyx.

In swamps and wet woods, or sometimes in dry soil, Maine to northern New Jersey and Florida, mostly near the coast. July Aug.

2. Clethra acuminàta Michx.
Mountain Sweet Pepperbush.
(Fig. 2725.)

Clethra acuminata Michx. Fl. Bor. Am. 1: 260. 1803.

A tall shrub or small tree, similar to the preceding species. Leaves oval, oblong, or ovate, acuminate at the apex, narrowed or rounded at the base, green above, pale and sometimes pubescent beneath, closely serrulate with very sharp-pointed teeth, 2′–7′ long, sometimes 3½′ wide; petioles 4″–12″ long; racemes spreading or recurved, solitary, or 2–3 together, 2′–8′ long, the rachis, pedicels and calyx densely pubescent or canescent; bracts longer than the flowers, caducous; filaments and bases of the petals hirsute.

In mountain woods, Virginia and West Virginia to Georgia. Ascends to 1500 ft. in North Carolina. July–Aug.

Family 2. **PYROLÀCEAE** Agardh, Cl. Pl. 18. 1825.

Wintergreen Family.

Low mostly evergreen perennials, with branched rootstocks. Leaves petioled. Flowers perfect, nearly regular, racemose, solitary or corymbose, white or pink. Calyx 4–5-lobed. Corolla very deeply 4–5-parted, or of 5 petals. Stamens twice as many as the divisions of the corolla, the anthers introrse in the bud, inverted at anthesis, opening by pores or short slits; pollen-grains in 4's. Ovary superior, 4–5-celled; style short or slender, often declined; stigma 5-lobed, or 5-crenate; ovules very numerous, anatropous. Fruit a loculicidally dehiscent capsule. Seeds very numerous, minute, the loose cellular coat much larger than the almost undifferentiated embryo.

Three genera and about 20 species, natives of the northern hemisphere.

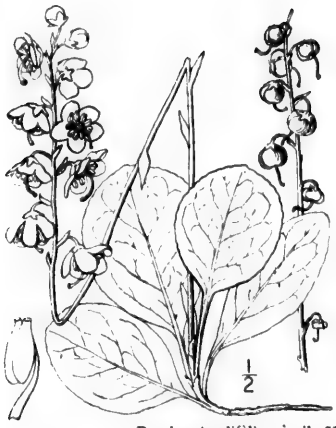
Flowers racemose; leaves basal. — 1. *Pyrola.*
Flowers solitary or corymbose; leaves opposite or whorled.
  Stem leafy at base; flower solitary; style long. — 2. *Moneses.*
  Stem horizontal; branches erect, leafy; style very short. — 3. *Chimaphila.*

1. PYROLA L. Sp. Pl. 396. 1753.

Low glabrous herbs, acaulescent or nearly so, stoloniferous, perennial. Leaves basal, persistent (one northwestern species leafless). Flowers nodding, or in one species ascending, white, yellowish, pink, or purple, racemose, on erect bracted scapes. Calyx 5-parted, persistent. Petals 5, concave, sessile, deciduous. Stamens 10, declined, or straight and connivent; filaments subulate, glabrous; anthers erect in the bud, emarginate or 2-beaked at the base, mostly reversed at flowering, each sac opening by a basal but apparently apical pore. Ovary 5-celled; style straight or declined, filiform, or thickened at the summit; stigma 5-lobed. Disk usually obsolete, rarely present and 10-lobed. Capsule subglobose, 5-lobed, 5-celled, loculicidally 5-valved from the base, the valves cobwebby on the margins when opening, the apex and base intruded. [Latin, diminutive of *Pyrus*, pear, from the similar leaves.]

About 15 species, natives of the northern hemisphere. Besides the following, 3 others occur in western North America.

Style and stamens declined (slightly so in no. 6).
  Petals very obtuse; leaves rounded at the apex.
    Leaves rounded, truncate or narrowed at the base.
      Flowers white or greenish white; plants of dry woods.
        Calyx-lobes oblong or lanceolate; leaves shining. — 1. *P. rotundifolia.*
        Calyx-lobes ovate or triangular, short; leaves dull.
          Blades orbicular, coriaceous, mostly shorter than petioles. — 2. *P. chlorantha.*
          Blades oval, membranous, longer than their petioles. — 3. *P. elliptica.*
      Flowers pink or purple; bog plant. — 4. *P. uliginosa.*
    Leaves reniform, cordate; flowers pink. — 5. *P. asarifolia.*
  Petals and leaves acute, the latter small. — 6. *P. oxypetala.*
Style straight; stamens connivent.
  Style short; disk none; raceme regular. — 7. *P. minor.*
  Style elongated; disk 10-lobed; flowers in a 1-sided raceme. — 8. *P. secunda.*



1. Pyrola rotundifòlia L. Round-leaved Wintergreen. (Fig. 2726.)

Pyrola rotundifolia L. Sp. Pl. 396. 1753.

Scape 6′–20′ high, 6–20-flowered. Leaf-blades orbicular or oval, spreading, obtuse, coriaceous, shining above, crenulate, narrowed, rounded, truncate or rarely subcordate at the base, 1½′–3′ long, usually slightly longer than wide, often shorter than their narrowly margined petioles; flowers white, nodding, very fragrant, 7″–9″ broad; pedicels 2″–3″ long, mostly longer than their bracts; calyx-lobes oblong or lanceolate, about one-third the length of the obtuse petals; stamens and style declined-ascending; style exserted; capsule 2″–3″ in diameter.

In dry woods, Nova Scotia to Minnesota, south to Georgia and Ohio. Ascends to 3000 feet in North Carolina. Also in Europe. Called also False, Larger, or Pear-leaved Wintergreen, and Indian or Canker Lettuce. June–July.

Pyrola rotundifòlia pùmila Hornem. Plantel, Ed. 3. 1: 463. 1821.

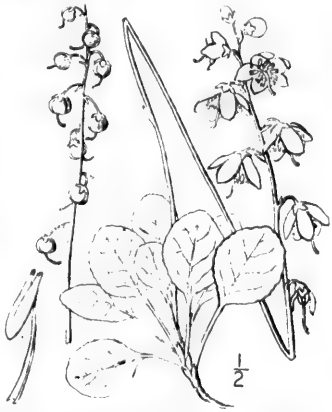
Scape 3′–6′ high; leaves seldom 1′ long; calyx-lobes oblong, mostly obtuse. Greenland and Labrador to the Northwest Territory. Perhaps a distinct species.

2. Pyrola chlorántha Sw. Greenish-flowered Wintergreen. (Fig. 2727.)

P. chlorantha Sw. Act. Holm. 1810: 190. *pl.* 5. 1810.

Scape 4′–12′ high, 3–10-flowered. Blades orbicular, or broadly oval, mostly obtuse at both ends, but sometimes narrowed at the base, coriaceous, dull, obscurely crenulate, or entire, ¼′–1′ long, shorter than or equalling their petioles; flowers nodding, slightly odorous, greenish white, 5″–7″ broad; pedicels 2″–3″ long, mostly longer than their bracts; calyx-lobes ovate, or triangular-ovate, acute or obtuse, about one-fourth the length of the obtuse petals; stamens and style declined-ascending; anther-sacs short-beaked; style exserted; capsule about 3″ in diameter.

In dry woods, Labrador to British Columbia, south to the District of Columbia, Illinois, Nebraska and Colorado. Also in Europe. June–July.



3. Pyrola ellíptica Nutt. Shin-leaf. (Fig. 2728.)

Pyrola elliptica Nutt. Gen. 1: 273. 1818.

Scape 5′–10′ high, 7–15-flowered. Blades broadly oval, or elliptic, thin or membranous, dark green, obtuse, but usually mucronulate at the apex, narrowed or rounded at the base, plicate-crenulate with very low teeth, 1½′–3′ long, almost always longer than their petioles; flowers greenish white, nodding, 6″–8″ broad, very fragrant; pedicels longer than or equalling their bracts; calyx-lobes ovate-triangular, acute or acuminate, about one-fourth as long as the obtuse petals; stamens and style declined-ascending; anther-sacs scarcely beaked; style somewhat exserted; capsule about 3″ in diameter.

In rich, mostly dry woods, Nova Scotia to British Columbia, south to the District of Columbia, Illinois, Michigan and in the Rocky Mountains to New Mexico. June–Aug.

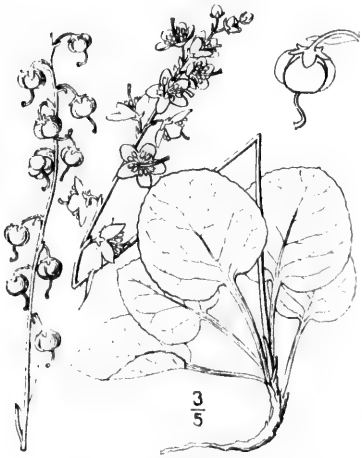
4. Pyrola uliginòsa Torr. Bog Wintergreen. (Fig. 2729.)

Pyrola uliginosa Torr. Fl. N. Y. 1: 453. *pl. 60.* 1843.
Pyrola rotundifolia var. *uliginosa* A. Gray, Man. Ed. 2, 259. 1856.

Scape 6′–15′ high, 7–15-flowered. Blades broadly oval, or orbicular, dull, rather thick, obscurely crenulate, obtuse at both ends, sometimes truncate at the base, equalling or shorter than their petioles; bracts shorter than or equalling the pedicels; flowers purple, 5″–8″ broad; calyx-lobes oblong or ovate-lanceolate, acute or obtuse, one-fourth to one-third the length of the obtuse petals; stamens and style declined-ascending; anther-sacs beaked; style slightly exserted; capsule about 2½″ in diameter.

In swamps and bogs, Nova Scotia to British Columbia, south to New England, central New York, Michigan and in the Rocky Mountains to Colorado. Apparently also in Japan. June.

5. Pyrola asarifòlia Michx. Liver-leaf Wintergreen. (Fig. 2730.)



Pyrola asarifolia Michx. Fl. Bor.Am. 1: 251. 1803.
Pyrola rotundifolia var. *asarifolia* Hook. Fl. Bor. Am. 2: 46. 1834.

Similar to the preceding species. Blades reniform, usually wider than long, coriaceous, shining above, obtuse at the apex, cordate at the base, crenulate, 1′–1½′ long, usually shorter than their narrowly margined petioles; flowers racemose, nodding, purple, or rose, 6″–8″ broad; calyx-lobes triangular-lanceolate or ovate-lanceolate, acute or acuminate, about one-third the length of the obtuse petals; stamens and style decurved-ascending; anther-sacs slightly beaked; style exserted; capsule about 3″ in diameter.

In wet woods and swamps, New Brunswick to the Northwest Territory, south to Massachusetts, northern New York, Minnesota, and in the Rocky Mountains to Colorado. June–July.

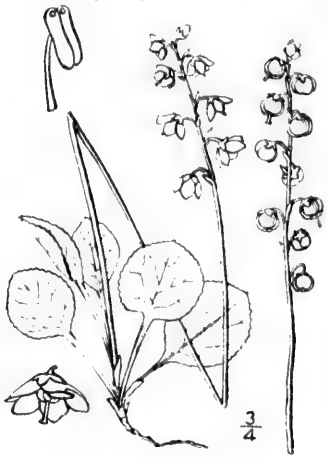
6. Pyrola oxypétala Austin. Sharp-petaled Wintergreen. (Fig. 2731.)

Pyrola oxypetala Austin; A. Gray, Man. Ed. 5, 302. 1867.

Scape slender, 7′–9′ high, about 9-flowered. Blades ovate, coriaceous, dull, acute or acutish at the apex, narrowed at the base, obscurely crenulate, 7″–10″ long, shorter than their petioles; flowers racemose, ascending, greenish, 4″–5″ broad; bracts shorter than their pedicels; calyx-lobes triangular-ovate, acute, about one-third the length of the elliptic-lanceolate acuminate connivent petals; stamens and styles slightly declined; anther-sacs slightly horned.

Hills, Deposit, Delaware Co., N. Y. (C. [illegible] Austin, 1860). The only station known. June.

7. Pyrola minor L. Lesser Wintergreen. (Fig. 2732.)



Pyrola minor L. Sp. Pl. 396. 1753.

Leaf-blades rather thin, broadly oval, or nearly orbicular, dark green, crenulate, obtuse but sometimes mucronate at the apex, rounded, slightly narrowed, or subcordate at the base, 9″–18″ long; flowers racemose, nodding, white or pinkish, 3″–4″ broad; pedicels 1″–2½″ long, equalling or longer than the bracts; calyx-lobes mostly triangular-ovate and acute; style straight, included; stamens not declined, connivent around the pistil; petals oval or orbicular, obtuse; capsule about 2½″ in diameter.

In woods, Greenland and Labrador to Alaska, south to northern New England, western Ontario and Oregon, south in the Rocky Mountains to New Mexico. Also in Europe and Asia. Called also Wood Lily. June–Aug.

8. Pyrola secúnda L. Serrated or One-sided Wintergreen. (Fig. 2733.)

Pyrola secunda L. Sp. Pl. 396. 1753.

Scapes usually several together from the much-branched rootstock, slender, 4′–10′ high. Blades ovate, or often oval, mostly thin, acute, or rarely obtuse at the apex, rounded or narrowed at the base, crenulate-serrulate, 9″–2′ long, longer than their petioles; flowers many, in a dense one-sided raceme, at first erect, soon drooping, greenish white, 3″–4″ broad; pedicels short; calyx-lobes ovate, obtuse, or obtusish, very short; petals oval, obtuse, with a pair of tubercles at the base, campanulate-connivent; style straight, exserted; stamens not declined, connivent around the pistil; capsule about 2″ in diameter.

In woods and thickets, Labrador to Alaska, south to the District of Columbia, Pennsylvania, Michigan, along the Rocky Mountains to Mexico and to California. Ascends to 3000 ft. in the Adirondacks. Also in Europe and Asia. June–July.

Pyrola secúnda pùmila Paine, Cat. Plants Oneida Co., N. Y. 135, is a low northern form, the scape 2′–4′ high, 3–8-flowered, the leaves orbicular or broadly oval, ½″–1′ long.

2. MONÈSES Salisb.; S. F. Gray, Arr. Brit. Plants, 2: 403. 1821.

A low perennial glabrous herb, with a decumbent leafy base, petioled evergreen crenulate leaves, opposite, or verticillate in 3's, and a solitary drooping white or pink flower at the summit of a slender scape. Calyx 4–5-parted, persistent. Petals 4–5, spreading, broadly ovate or orbicular, sessile. Stamens 8 or 10, similar to those of *Pyrola*. Disk obsolete. Ovary globose, 4–5-celled; style straight, club-shaped at the summit; stigma 4–5-lobed; ovules very numerous in each cavity. Capsule subglobose, 4–5-lobed, 4–5-celled, loculicidally 4–5-valved from the summit, the valves glabrous on the margins. Seeds numerous, minute, the testa reticulated, produced at each end. [Greek, single-delight, from the single flower.]

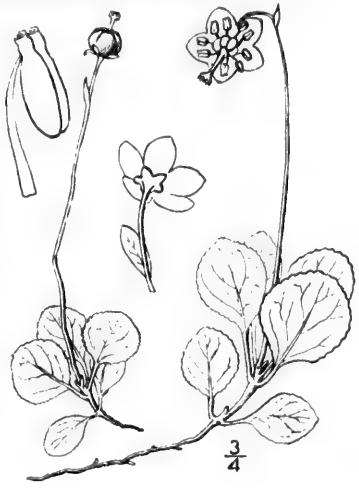
A monotypic genus of the cooler parts of the northern hemisphere.

1. **Moneses uniflòra** (L.) A. Gray. One-flowered Wintergreen. (Fig. 2734.)

Pyrola uniflora L. Sp. Pl. 397. 1753.

Moneses grandiflora S. F. Gray, Arr. Brit. Pl. 2: 403. 1821.

Moneses uniflora A. Gray, Man. 273. 1848.



Stem bearing 1–3 pairs or whorls of leaves at the base, continued above into a bracted or naked scape 2′–6′ high. Blades orbicular or ovate, obtuse at the apex, narrowed, rounded or sometimes subcordate at the base, rather thin, 4″–12″ long, longer than or equalling their petioles; flowers 6″–10″ broad; calyx-lobes ovate, obtuse, about one-fifth the length of the petals; capsule erect, 3″–4″ in diameter, about as long as the persistent style and conspicuously lobed stigma.

In woods, Labrador to Alaska, south to Connecticut, Pennsylvania, Michigan, in the Rocky Mountains to Colorado and to Oregon. Ascends to 4000 ft. in the Adirondacks. Also in Europe and Asia. June–Aug.

3. **CHIMÁPHILA** Pursh, Fl. Am. Sept. 279. 1814.

Perennial herbs, with decumbent stems, ascending leafy branches, the leaves opposite, or verticillate, coriaceous, evergreen, short-petioled and serrate, and spreading or nodding white or purplish flowers in terminal corymbs. Pedicels mostly bracteolate. Calyx 5-cleft, or 5-parted, persistent. Petals 5, concave, nearly orbicular, sessile, spreading or recurved. Stamens 10, similar to those of *Pyrola*, the filaments usually somewhat pubescent. Ovary globose, 5-lobed, 5-celled; ovules numerous in the cavities; style very short, obconic; stigma large, orbicular, 5-crenate. Capsule erect, globose, 5-lobed, 5-celled, loculicidally 5-valved from the top, the valves not woolly on the margins. Seeds numerous, minute, the testa reticulated, produced at each end. [Greek, winter-loving, from its evergreen leaves.]

About 6 species, natives of North America, Mexico and northeastern Asia. Besid[illegible]e following another occurs on our Pacific Coast.

Leaves lanceolate, mottled with white. 1. *[illegible]culata.*
Leaves spatulate or cuneate-oblanceolate, bright green. 2. *[illegible]bellata.*

1. **Chimaphila maculàta** (L.) Pursh. Spotted Wintergreen. (Fig. 2735.)

Pyrola maculata L. Sp. Pl. 396. 1753.

Chimaphila maculata Pursh, Fl. Am. Sept. 300. 1814.

Stem extensively trailing, creeping or horizontally subterranean, sending up both sterile and flowering branches 3′–10′ high. Leaves lanceolate, ovate-lanceolate, or the lower much shorter and ovate, acute or acuminate at the apex, rounded or narrowed at the base, sharply serrate with rather distant teeth, dark green and mottled with white along the veins, 1′–3′ long, 3″–12″ wide below the middle; flowers few, corymbose or umbellate, white or pinkish, 6″–10″ broad; peduncle and pedicels puberulent; filaments villous at the middle; capsules erect, depressed-globose, about 4″ in diameter.

In dry woods, Maine and Ontario to Minnesota, south to Georgia and Mississippi. Ascends to 4200 ft. in North Carolina. June–Aug.

2. Chimaphila umbellàta (L.) Nutt. Pipsissewa. Prince's Pine. (Fig. 2736.)

Pyrola umbellata L. Sp. Pl. 396. 1753.
Chimaphila corymbosa Pursh, Fl. Am. Sept. 300. 1814.
Chimaphila umbellata Nutt. Gen. 1: 274. 1818.

Similar to the preceding species, the branches commonly stouter, sometimes 1° high and usually more leafy. Leaves spatulate or cuneate-oblanceolate, obtuse or acutish at the apex, sharply serrate, bright green and shining, not mottled, 1′–2½′ long, 3″–12″ wide above the middle; flowers several, umbellate or subcorymbose, white or pinkish, commonly smaller than those of the preceding species, usually marked by a deep pink ring; filaments ciliate; capsule 3″–4″ in diameter.

In dry woods, Nova Scotia to British Columbia, south to Georgia, Mexico and California. Also in Europe and Asia. June–Aug.

Family 3. **MONOTROPÀCEAE** Lindl. Nat. Syst. Ed. 2, 219. 1836.

Indian-Pipe Family.

Humus-plants or saprophytes, with mostly simple, leafless bracted scapes, and solitary or clustered perfect regular flowers. Calyx 2–6-parted, free from the ovary; sepals erect, connate at the base, imbricated, deciduous. Corolla gamopetalous or polypetalous (wanting in the California *Allotropa*); lobes or petals 3–6. Stamens 6–12, hypogynous; filaments distinct, or united at base; anthers 2-celled or confluently 1-celled, attached to the filaments by their backs or bases; pollen-grains simple. Disk obsolete or 8–12-lobed. Ovary superior, 4–6-lobed, 1–6-celled; style short or elongated; stigma capitate or peltate; ovules numerous, anatropous. Capsule 4–6-lobed, or terete, 1–6-celled, loculicidally 4–6-valved, many-seeded. Seeds minute, the testa reticulated.

About 9 genera and 12 species, mostly of the northern hemisphere, most abundant in North America.

Corolla gamopetalous, persistent.
- Corolla globose-ovoid; anthers 2-awned. 1. *Pterospora.*
- Corolla campanulate; anthers awnless. 2. *Monotropsis.*

Corolla polypetalous, deciduous.
- Flower solitary. 3. *Monotropa.*
- Flowers racemose. 4. *Hypopitys.*

1. **PTERÓSPORA** Nutt. Gen. 1: 269. 1818.

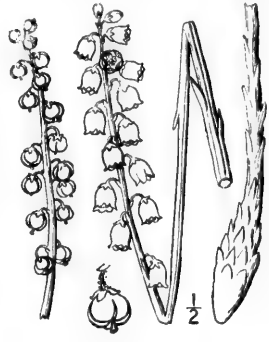
Scape slender, glandular-pubescent, from a thick base of matted fibrous roots. Flowers and capsules racemose, pendulous. Calyx deeply 5-parted. Corolla gamopetalous, globose-ovoid, with 5 reflexed lobes. Stamens 10, included; filaments subulate, glabrous; anthers introrse, horizontal in the bud, the sacs longitudinally dehiscent, each with a deflexed awn at the base. Disk none. Ovary subglobose, 5-lobed, 5-celled; style short, columnar; stigma capitate, 5-lobed. Capsule depressed globose, 5-lobed, 5-celled, 5-valved, the apex and base intruded. Seeds horizontal, globose-ovoid, with a terminal reticulated wing. [Greek, wing-seeded.]

A monotypic genus of temperate North America.

1. Pterospora Andromedèa Nutt. Giant Bird's-nest. Pine Drops. (Fig. 2737.)

Pterospora Andromedea Nutt. Gen. 1: 269. 1818.
Monotropa procera Torr.; Eaton, Man. Ed. 2, 324. 1818.

Roots very astringent, forming a rounded mass sometimes 2′ in diameter. Scape purplish or brown, 6′–4½° high, bracted, grooved, densely covered with viscid hairs. Bracts lanceolate, or linear, very numerous and crowded at the base; flowers numerous, racemose, white, 2″–4″ broad; pedicels at first spreading, soon recurved, 3″–10″ long, viscid; sepals oblong, about one-half the length of the corolla; capsule 4″–6″ in diameter.



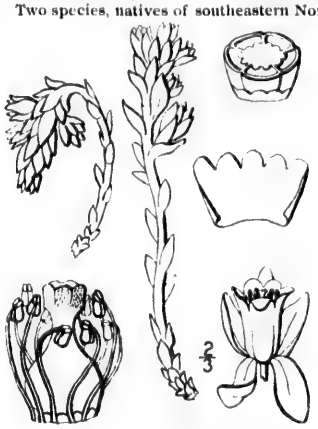
In rich woods, Quebec and New Hampshire to Pennsylvania, west to British Columbia and California, south in the Rocky Mountains to Arizona. Called also Albany Beech drops. June–Aug.

2. MONOTRÓPSIS Schwein.; Ell. Bot. S. C. & Ga. 1: 478. 1817.

[SCHWEINITZIA Nutt. Gen. 2: Add. 3. 1818.]

Scape slender, bracted; plant glabrous throughout. Sepals 5, oblong to linear. Corolla gamopetalous, oblong-campanulate, persistent, 5-saccate at the base, 5-lobed, the lobes not reflexed. Stamens 10, included; filaments subulate, glabrous; anthers horizontal in the bud, introrse, the sacs confluent, opening by large terminal pores, awnless. Disk 10-crenate. Ovary globose, 5-celled; style short, thick; stigma discoid, 5-angled. Capsule ovoid, 5-celled. Seeds very numerous. [Greek, resembling *Monotropa*.]

Two species, natives of southeastern North America.



1. Monotropsis odoràta Ell. Sweet Pine-sap. Carolina Beech-drops. (Fig. 2738.)

Monotropsis odorata Ell. Bot. S. C. & Ga. 1: 479. 1817.
Schweinitzia Caroliniana Don, Gen. Syst. 3: 867. 1834.
Schweinitzia odorata DC. Prodr. 7: 780. 1839.

Plant light purplish brown; scapes usually several in a cluster, 2′–4′ high. Bracts numerous, ovate-oblong, obtuse, appressed, 2″–3″ long; flowers few (usually 6–8), pink, densely spicate, fragrant, 2-bracteolate at the base, spreading or erect, the spike at first recurved, becoming erect, 1′–2′ long; sepals mostly oblong-lanceolate, acute, about as long as the corolla and the bractlets.

In woods, Maryland to North Carolina. Very rare. Feb.–May.

3. MONÓTROPA L. Sp. Pl. 387. 1753.

Scapose succulent white yellowish or red bracted herbs, with a solitary nodding flower, the capsule becoming erect. Sepals 2–4, deciduous. Petals 5 or 6, oblong, somewhat dilated at apex, erect, not saccate at the base, tardily deciduous. Stamens 10–12; filaments subulate-filiform; anthers short, peltate, horizontal, opening at first by 2 transverse chinks, becoming transversely 2-valved. Disk 10–12-toothed, confluent with the base of the ovary. Ovary 5-celled; style short, thick; stigma funnelform, its margin obscurely crenate, not ciliate. Capsule 5-celled, 5-valved, many-seeded. Seeds minute, the testa produced at each end. [Greek, once-turned.]

Two species, natives of North America, Mexico, Colombia, Japan and the Himalayas. The following is the only one known in North America.

1. Monotropa uniflòra L. Indian Pipe. (Fig. 2739.)

Monotropa uniflora L. Sp. Pl. 387. 1753.

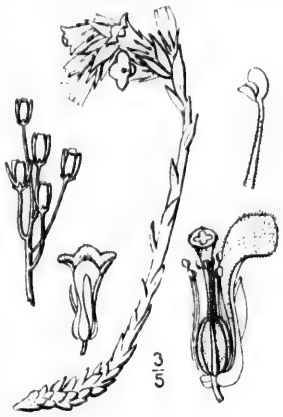
Scapes white, glabrous, usually clustered, 4′–10′ high from a mass of matted brittle roots, turning dark in drying. Flower terminal, inodorous, nodding, oblong-campanulate, ½′–1′ long, the fruit becoming erect; petals 4–5 (rarely 6), puberulent within, white, rather longer than the usually 10 stamens; filaments pubescent; ovary ovoid, acute, narrowed into the short style; capsule erect, obtusely angled, 5″–8″ high, 4″–5″ in diameter.

In moist rich woods, Anticosti to Florida, west to Washington and California, almost throughout temperate and warm North America. Ascends to 4200 ft. in North Carolina. Also in Japan and the Himalayas. Whole plant occasionally pink or red. Called also American Ice-plant, Ghost-flower, Corpse-plant. June–Aug.

4. HYPÓPITYS Adans. Fam. Pl. 2: 443. 1763.

Scapes slender, pubescent at least above, bearing numerous white yellowish or red flowers in a nodding one-sided raceme which soon becomes erect. Roots a dense mass of fleshy fibres. Terminal flower usually 5-parted, the lateral ones 3–4-parted. Sepals commonly as many as the petals. Petals saccate at the base. Stamens 6–10; filaments subulate-filiform; anthers horizontal, the 2 sacs becoming confluent, opening by 2 unequal valves, the larger one spreading or reflexed, the smaller erect. Disk confluent with the base of the ovary, 8–10-toothed. Ovary 3–5-celled; style slender; stigma funnelform, its margin glandular-ciliate. Capsule 3–5-celled, 3–5-valved, erect. [Greek, referring to its growth under firs.]

A monotypic genus of the north temperate zone.



1. Hypopitys Hypópitys (L.) Small. Pine-sap. False Beech-drops. (Fig. 2740.)

Monotropa Hypopitys L. Sp. Pl. 387. 1753.
Hypopitys Monotropa Crantz, Inst. 2: 467. 1766.
Hypopitys Hypopitys Small, Mem. Torr. Club, 4: 137. 1894.

Plants usually slightly fragrant; scapes mostly clustered, 4′–12′ high. Bracts ovate-lanceolate, densely imbricated at the base, scattered above; raceme 3–15-flowered, 1′–5′ long; pedicels bracteolate or naked, 3″–10″ long; flowers oblong-campanulate, 4″–7″ long, white, yellowish to pink, more or less bracteolate at the base, the bractlets closely resembling the sepals; filaments pubescent; capsule globose-oblong, 2″–3″ high.

In dry woods, Anticosti to Florida, British Columbia and Arizona. Also in Europe and Asia. Called also Bird's-nest. June–Oct.

Family 4. ERICÀCEAE DC. Fl. Franc. 3: 675. 1805.

HEATH FAMILY.

Shrubs, perennial herbs, or trees, with simple exstipulate leaves, and mostly perfect, gamopetalous or polypetalous flowers. Calyx inferior, free from the ovary, 4–5-parted or 4–5-cleft, mostly persistent. Corolla regular, or rarely somewhat 2-lipped and irregular, usually 4–5-toothed, -lobed or -parted. Stamens hypogynous, usually as many or twice as many as the corolla-lobes, teeth or petals; filaments mostly separate; anthers 2-celled, attached to the filaments by the back or base, the sacs often prolonged upwardly into tubes, dehiscent by terminal pores or chinks, or longitudinally, often awned. Disk crenate, lobed, or none. Ovary 2–5-celled; style elongated or short; stigma peltate or capitate; ovules usually numerous, anatropous. Fruit a capsule, berry or drupe. Seeds usually numerous and minute, or sometimes only 1 in each cavity; endosperm fleshy; embryo central; cotyledons short; radicle terete.

About 55 genera and 1050 species, of very wide geographic distribution.

* **Fruit a septicidal capsule; corolla deciduous; anthers unappendaged.**

Corolla of separate petals. 1. *Ledum.*
Corolla gamopetalous (polypetalous in no. 6).
  Corolla somewhat irregular (except in no. 5); seeds flat, winged.
    Corolla funnelform to campanulate; stamens exserted.
      Corolla funnelform, slightly 2-lipped; leaves deciduous. 2. *Azalea.*
      Corolla 2-lipped, lower lip divided to the base; leaves deciduous. 3. *Rhodora.*
      Corolla campanulate; leaves evergreen. 4. *Rhododendron.*
    Corolla urn-shaped; stamens not exserted. 5. *Menziesia.*
  Corolla regular; seeds angled, or rounded.
    Corolla polypetalous. 6. *Dendrium.*
    Corolla gamopetalous.
      Stamens 5; capsule 2-3-celled. 7. *Chamaecistus.*
      Stamens 10; capsule 5-celled.
        Corolla saucer-shaped, 10-saccate. 8. *Kalmia.*
        Corolla ovoid. 9. *Phyllodoce.*

* * **Fruit a loculicidal capsule, berry or drupe; corolla deciduous; anthers often awned.**

† Fruit a dry capsule; calyx not accrescent, mostly small.

Low heath-like shrubs; leaves subulate, very small. 10. *Cassiope.*
Shrubs, or trees; leaves linear to broadly oval.
  Anther-sacs opening by a terminal pore or chink.
    Sepals or calyx-lobes imbricated, at least in the bud.
      Capsule dehiscent into a single layer of 5 valves. 11. *Leucothoë.*
      Capsule dehiscent into 2 layers, the outer 5-valved, the inner 10-valved. 12. *Chamaedaphne.*

Sepals or calyx-lobes valvate, or separate, in the bud.
Anthers 2-awned on the back.
Corolla urn-shaped or cylindric; leaves not glaucous. 13. *Pieris.*
Corolla globose; leaves narrow, glaucous beneath. 14. *Andromeda.*
Anthers awnless. 15. *Xolisma.*
Anther-sacs longitudinally dehiscent.
Corolla ovoid-cylindric, 5-toothed; tall shrub or tree. 16. *Oxydendron.*
Corolla salverform, 5-lobed; trailing shrub. 17. *Epigaea.*
† † Fruit a drupe, or a capsule enclosed by the fleshy accrescent calyx.
Fruit consisting of the fleshy calyx surrounding the capsule. 18. *Gaultheria.*
Fruit a drupe with 4 or 5 nutlets.
Nutlets coalescent; leaves persistent. 19. *Arctostaphylos.*
Nutlets separate; leaves deciduous. 20. *Mairania.*
* * * Fruit a septicidal capsule; corolla withering-persistent; anthers appendaged. 21. *Calluna.*

1. LÈDUM L. Sp. Pl. 391. 1753.

Erect branching evergreen resinous shrubs, with scaly buds, the foliage fragrant when crushed. Leaves alternate, thick, short-petioled, oblong or linear, revolute-margined. Flowers white, numerous in terminal umbels or corymbs. Pedicels bracted at the base, the bracts scarious, deciduous. Calyx small or minute, 5-toothed, persistent. Petals 5, obovate or oval, obtuse, spreading, imbricated. Stamens 5 or 10 (rarely 5 to 7), exserted; filaments filiform; anthers small, attached by their backs to the filaments, globose-didymous, awnless, the sacs opening by terminal pores. Disk annular, 8–10-lobed. Ovary ovoid, scaly, 5-celled; ovules numerous; style filiform; stigma 5-lobed. Capsule oblong, 5-celled, septicidally 5-valved from the base. [Greek, ledon, the plant now called *Cistus Ledon.*]

Three species, natives of the north temperate and sub-arctic zones. Besides the following, another occurs on the Pacific coast.

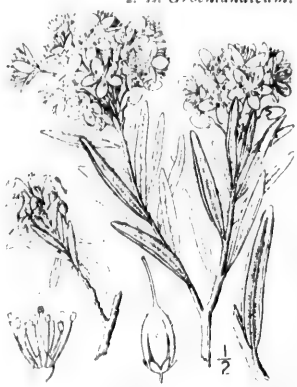
Leaves linear, 1″–2″ wide; stamens 10. 1. *L. palustre.*
Leaves oblong, 3″–8″ wide; stamens 5–7. 2. *L. Groenlandicum.*

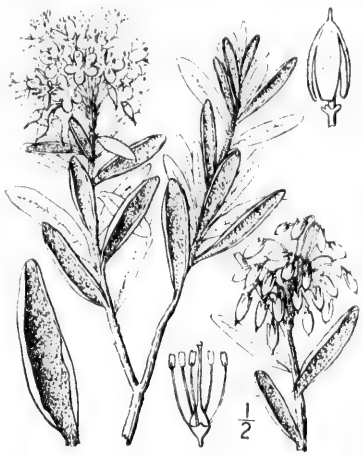
1. Ledum palústre L. Narrow-leaved Labrador Tea. (Fig. 2741.)

Ledum palustre L. Sp. Pl. 391. 1753.

A shrub, 6′–2° high, the twigs rusty-tomentose. Leaves linear, obtuse, dark green and somewhat rugose above, densely tomentose with brown wool beneath, strongly revolute-margined, ½′–1½′ long, 1″–2″ wide; flowers 3″–5″ broad; pedicels very pubescent, 6″–12″ long in fruit; stamens 10; capsule oblong or oval, scurfy, about 2″ high and 1″ in diameter, nodding; calyx-teeth less than ½″ long, ovate, obtusish.

In bogs, Newfoundland to Alaska. Also in northern Europe and Asia. Called also Marsh Tea, Wild Rosemary. Yields the Ledum oil. Summer.



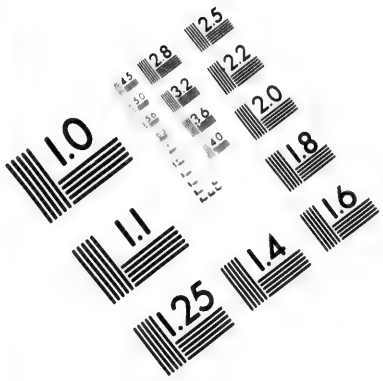


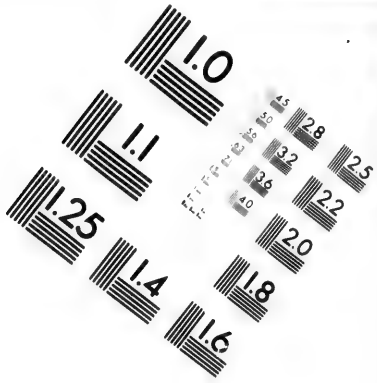
2. Ledum Groenlándicum Oeder. Labrador Tea. (Fig. 2742.)

Ledum Groenlandicum Oeder, Fl. Dan. *pl.* 567. 1771.
Ledum latifolium Ait. Hort. Kew. 2: 65. 1789.

A shrub, 1°–4° high, similar to the preceding species, the twigs densely tomentose. Leaves oblong, obtuse, 1′–2′ long, 3″–8″ wide, green and slightly rugose above, densely brown-tomentose beneath, strongly revolute-margined; flowers 4″–5″ broad, umbellate or short-corymbose; pedicels brown-canescent or tomentose, 10″–12″ long and recurved in fruit; stamens 5–7; capsule oblong, canescent, nodding, 3″–3½″ long, 1″–1¼″ in diameter.

In bogs and swamps, Greenland to British Columbia, south to Massachusetts, New Jersey, Pennsylvania and Wisconsin. May–June.





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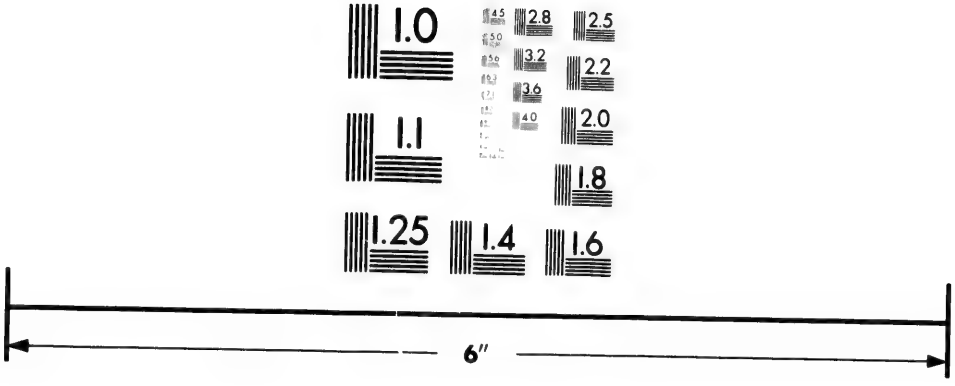

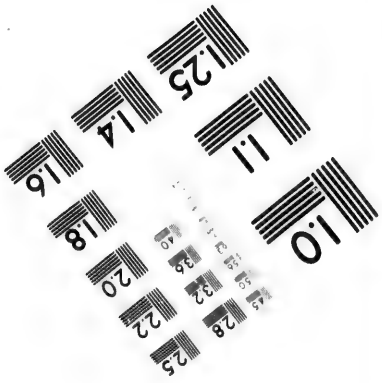

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2. AZÀLEA L. Sp. Pl. 150. 1753.

Erect mostly tall branching shrubs, with alternate thin deciduous leaves. Flowers large, white, purple, yellow, pink, or orange, in terminal umbels developed from cone-like scaly buds. Calyx small or minute, 5-parted. Corolla funnelform, the tube mostly narrow, the limb nearly regularly 5-lobed or somewhat 2-lipped. Stamens 5 (rarely 10), exserted, usually declined; anthers awnless, attached to the filaments by their backs, the cells opening by terminal pores; style slender, declined, exserted. Ovary 5-celled; ovules numerous in the cavities. Capsule oblong or linear-oblong, 5-celled, septicidally 5-valved from the summit, many-seeded. [Greek, dry, from its habitat.]

About 40 species, natives of North America and Asia. Besides the following, 2 others occur on the Pacific coast.

Flowers expanding before or with the leaves.
- Flowers pink or white.
  - Leaves strigose on the midrib beneath; corolla-tube hirsute. 1. *A. nudiflora.*
  - Leaves canescent beneath; corolla-tube glandular. 2. *A. canescens.*
- Flowers orange, yellow or red; leaves canescent beneath. 3. *A. lutea.*

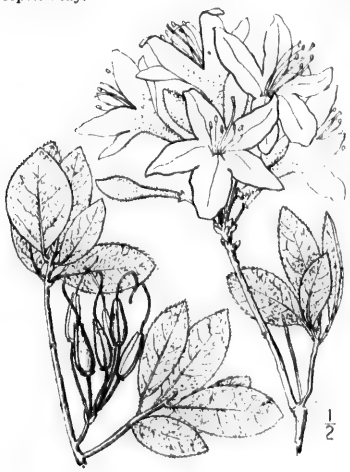
Flowers expanding later than the leaves.
- Leaves shining, glabrous beneath. 4. *A. arborescens.*
- Leaves strigose on the midrib beneath. 5. *A. viscosa.*

1. Azalea nudiflòra L. Wild Honeysuckle. Pinkster-flower. Purple or Pink Azalea. (Fig. 2743.)

Azalea nudiflora L. Sp. Pl. Ed. 2, 214. 1762.
Rhododendron nudiflorum Torr. Fl. N. & Mid. U. S. 424. 1824.

A shrub, 2°–6° high, branched above, often simple below, the twigs glabrous, or with stiff hairs. Leaves oblong or obovate, acute at both ends, short-petioled, hairy on the midrib and sometimes on the lateral veins beneath, glabrous or with a few scattered hairs above when old, sometimes canescent on the lower surface when unfolding, 2′–4′ long, the margins ciliolate; pedicels strigose, 4″–7″ long; flowers pink to nearly white, expanding before or with the leaves, faintly odorous, the limb somewhat 2-lipped, 1½′–2′ broad, shorter than the narrow tube, which is pilose-pubescent and little or not at all glandular; stamens much exserted; capsule linear-oblong, strigose, 8″–9″ long, erect.

In dry sandy or rocky woods and thickets, Maine to Illinois, south to Florida and Texas. Ascends to 3000 ft. in Virginia. Reported from Canada. Its fungus is called Honeysuckle- or Swamp-Apple. April–May.



2. Azalea canéscens Michx. Mountain Azalea. (Fig. 2744.)

Azalea canescens Michx. Fl. Bor. Am. 1: 150. 1803.
Rhododendron canescens Porter, Bull. Torr. Club, 16: 220. 1889.

A branching shrub, 4°–15° high, the twigs glabrous or sparingly pubescent. Leaves oval, elliptic or sometimes obovate, wider and shorter than those of the preceding species, permanently more or less soft-canescent and pale beneath and stiff-hairy or pubescent on the veins, varying to nearly glabrous, the margins ciliolate-serrulate; pedicels glandular; flowers rose-color to white, very fragrant, expanding with or before the leaves; corolla limb often 2′ broad, about equalling the rather stout, densely glandular but scarcely viscid tube; stamens slightly exserted; capsule linear-oblong, narrowed above, glandular, 6″–8″ long.

In woods, Massachusetts to the Catskill and Shawungunk Mountains, New York, Pocono plateau of Pennsylvania, south, especially along the Alleghanies, to Florida and Louisiana. April–May.

3. Azalea lùtea L. Flame Azalea. (Fig. 2745.)

Azalea lutea L. Sp. Pl. 150. 1753.
A. calendulacea Michx. Fl. Bor. Am. 1: 151. 1803.
Rhododendron calendulaceum Torr. Fl. N. & Mid. U. S. 425. 1824.

A shrub, 4°–15° high, similar to the preceding species, the twigs mostly glabrous. Leaves obovate or oval, permanently more or less canescent or tomentose beneath, glabrous, or with some scattered hairs above, the margins ciliolate-serrulate; pedicels short, pilose or glandular; flowers orange-yellow or red, very showy, slightly fragrant, expanding before or with the leaves; corolla-tube about the length of the nearly regular limb, glandular-pilose, the limb often 2′ broad; stamens long-exserted; capsule linear-oblong, about 8″ high, erect, more or less pubescent.

In dry woods, southern New York, and the mountains of Pennsylvania to Georgia, nearer the coast in North Carolina. Fine in cultivation. May–June.

4. Azalea arboréscens Pursh. Smooth or Tree Azalea. (Fig. 2746.)

Azalea arborescens Pursh. Fl. Am. Sept. 152. 1814.
Rhododendron arborescens Torr. Fl. N. & Mid. U. S. 425. 1824.

A shrub, 8°–20° high, glabrous or nearly so throughout. Leaves obovate, oblanceolate or oval, acute at both ends or sometimes abruptly acuminate at the apex, manifestly petioled, firm, bright green and shining above, light green beneath, 2′–4′ long, fragrant in drying, the margins ciliate; flowers white, or tinged with pink, very fragrant, the limb nearly regular, 1½′–2′ broad, about as long as the slender glandular tube; pedicels short, glandular; stamens and style red, long-exserted; capsule oblong, densely glandular, 6″–8″ long.

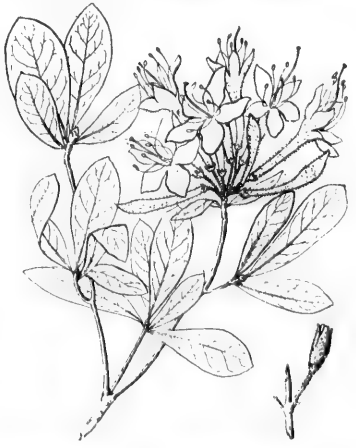
In woods, southern Pennsylvania to North Carolina. Ascends to 2500 ft. in North Carolina. June–July.

5. Azalea viscòsa L. Swamp Pink or Honeysuckle. White Azalea. (Fig. 2747.)

Azalea viscosa L. Sp. Pl. 151. 1753.
Rhododendron viscosum Torr. Fl. N. & Mid. U. S. 424. 1824.

A shrub, 4°–8° high, usually much branched, the twigs hairy. Leaves obovate-oblong to oblanceolate, 2′–4′ long, very short-petioled, obtuse and mucronulate or acute at the apex, narrowed at the base, glabrous or with a few scattered hairs above, more or less bristly hairy on the veins beneath, ciliolate, green on both sides; flowers white, fragrant, later than the leaves; pedicels glandular; corolla 1½′–2′ long, the limb 1′–2′ broad, more or less 2-lipped, much shorter than the slender, very viscid, densely glandular tube; capsule 5″–7″ high, glandular-bristly.

In swamps, Maine to Ohio, south to Florida and Texas. Clammy Azalea. June–July.



Azalea viscòsa hispida (Pursh) Britton, Mem. Torr. Club, 5: 248. 1894.
Azalea hispida Pursh. Fl. Am. Sept. 154. 1814.

Pedicels bristly-hispid; flowers at least the limb, pink; leaves glaucescent beneath; shrub 6°–15° high. Borders of ponds, Shawangunk Mountains to Pennsylvania and Montauk Point, N. Y

Azalea viscòsa glaùca Michx. Fl. Bor. Am. 1: 151. 1803.
Leaves white-glaucous beneath, 1′–2′ long, shrub 1°–6° high. Massachusetts to Virginia.

Azalea viscòsa nítida (Pursh) Britton, Mem. Torr. Club, 5: 248. 1894.
Azalea nítida Pursh, Fl. Am. Sept. 153. 1814.
Leaves about 1′ long, bright green on both sides; low shrub. Massachusetts to Virginia.

3. RHODÒRA L. Sp. Pl. Ed. 2, 561. 1762.

A branching shrub, with deciduous oval or oblong short-petioled alternate leaves. Flowers, umbellate or short-corymbose, short-pedicelled, rose-colored, purple, or nearly white, from terminal scaly buds. Calyx minute. Corolla 2-lipped, the upper lip unequally 2–3-lobed, the lower divided to the base, the segments recurved. Stamens 10, about equalling the corolla; anthers awnless, attached by their backs to the filaments. Ovary 5-celled; ovules numerous in the cavities; style slender, slightly exserted; stigma capitate. Capsule linear-oblong, 5-celled, septicidally 5-valved from the summit, many-seeded. [From the Greek, rhodon, a rose.]

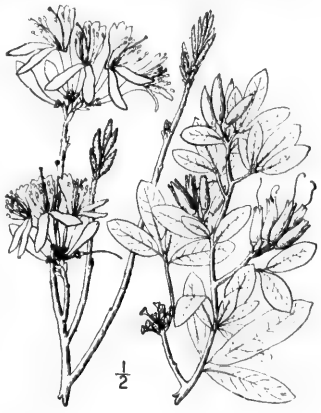
A monotypic genus of northeastern North America.

1. Rhodora Canadénsis L. Rhodora. (Fig. 2748.)

Rhodora Canadensis L. Sp. Pl. Ed. 2, 561. 1762.
Rhododendron Rhodora Don, Gen. Syst. 3: 848. 1834.
Rhododendron Canadense B.S.P. Prel. Cat. N. Y. 33. 1888.

A shrub, 1°–3° high, the branches slender, ascending or erect, the twigs sparingly strigose. Leaves oval, obtuse and mucronulate at the apex, narrowed at the base, entire, dark green and glabrous, or nearly so, above, light green or pale and glaucous and slightly pubescent, at least on the veins beneath, 1′–2′ long, 3″–7″ wide; flowers expanding with or before the leaves; pedicels very short, stiff, hairy; corolla 1′–1½′ broad; lower lip divided into two linear-oblong obtuse segments; capsule oblong, puberulent, glaucous, 5″–7″ high.

In bogs and on wet hillsides, Newfoundland to New Jersey, west to Quebec, central New York and Pennsylvania. May.



4. RHODODÉNDRON L. Sp. Pl. 392. 1753.

Branching shrubs, with alternate persistent coriaceous leaves. Flowers large, or middle-sized, purple, rose-colored or white, corymbose or umbellate, from scaly cone-like buds. Calyx small, or minute, 5-lobed or 5-parted. Corolla campanulate, 5-lobed, nearly regular. Stamens 5–10 (usually 10), little exserted, declined or equally spreading. Anthers awnless, attached by their backs to the filaments, the sacs opening by terminal pores. Style slender; stigma capitate or 5–20-lobed; ovules numerous. Capsule short or elongated, mostly woody, septicidally dehiscent, 5–20 valved from the summit. Seeds numerous. [Greek, rose-tree.]

About 100 species, natives of the northern hemisphere, most abundant in Asia. Besides the following some 5 others occur in the southern and western parts of North America.

Arctic-alpine shrub, 4′–12′ high; leaves small, lepidote. 1. *R. Lapponicum.*
Tall shrubs or low trees; leaves large, glabrous.
Leaves usually acute at both ends; calyx-lobes oblong, obtuse. 2. *R. maximum.*
Leaves mostly obtuse at both ends; calyx-lobes short, acute. 3. *R. Catawbiense.*

1. Rhododendron Lappónicum (L.) Wahl. Lapland Rose Bay. (Fig. 2749.)

Azalea Lapponica L. Sp. Pl. 151. 1753.
Rhododendron Lapponicum Wahl. Fl. Suec. 249. 1824.

Low, depressed or prostrate, branched, 2′–12′ high. Leaves oval, elliptic or oblong, obtuse and mucronulate at the apex, narrowed or rounded at the base, 4″–9″ long, 2″–4″ wide, densely covered with brownish scales on both sides, short-petioled; flowers few in the umbels, on short pedicels with scurfy scales; calyx-lobes oblong, obtuse, pubescent; corolla purple, 5-lobed, 7″–9″ broad, the lobes oblong, obtuse; capsule ovoid-oblong, 2″–3″ high.

Summits of the higher mountains of New England and the Adirondacks of New York; Quebec and Labrador to Greenland, west through arctic America to Alaska. Also in northern Europe and Asia. Summer.

2. Rhododendron máximum L. Great Laurel. Rose Bay. (Fig. 2750.)

Rhododendron maximum L. Sp. Pl. 392. 1753.

A tall shrub, or sometimes a tree, with maximum height of about 40° and trunk diameter of 1°. Leaves oblong, lanceolate-oblong or broadly oblanceolate, dark green on both sides, acute or abruptly short-acuminate at the apex, narrowed to a mostly acute base, 4′–7′ long, 1′–2½′ wide, glabrous, drooping in winter; petioles stout, ½′–1′ long; pedicels glandular, viscid-pubescent, 1′–2′ long; corolla 1½′–2′ broad, about 1′ long, rather deeply 5-cleft into oval obtuse lobes, rose-color, varying to white, sprinkled with yellowish or orange spots within; calyx-lobes oblong, obtuse; capsule oblong, puberulent, 5″–7″ high.

In low woods and along streams, Nova Scotia, Ontario and Ohio to Georgia, chiefly along the mountains, often forming almost impenetrable thickets. Wood hard, strong, light brown; weight per cubic foot 39 lbs. June–July.

3. Rhododendron Catawbiénse Michx. Mountain Rose Bay. Catawba or Carolina Rhododendron. (Fig. 2751.)

Rhododendron Catawbiense Michx. Fl. Bor. Am. 1: 258. 1803.

A shrub, 3°–20° high. Leaves oval or broadly oblong, mostly rounded or obtuse at both ends, sometimes narrowed at the base, mucronate, 3′–5′ long, 1½′–2′ wide, dark green above, pale or glaucous beneath; petioles stout, ½′–1½′ long, pubescent when young; pedicels rather stout, pubescent, becoming glabrous; corolla lilac-purple, 1½′–2′ long, 2′–2½′ broad, 5-lobed, the lobes broad and rounded; calyx-lobes triangular-ovate, acute or acuminate, short; capsule linear-oblong, puberulent, 8″–10″ high.

Mountain summits, Virginia and West Virginia to Georgia. May–June.

5. MENZIÈSIA J. E. Smith, Icon. Ined. 3. *pl. 56.* 1791

Erect branching shrubs, with alternate membranous entire deciduous leaves, and small nodding greenish purple slender-pedicelled flowers, in terminal corymbs or umbels, developed from scaly buds. Calyx 4-toothed or 4-parted, persistent. Corolla urceolate-cylindric, or nearly globose, 4-toothed or 4-lobed. Stamens 8, included; filaments subulate, flattish, slightly dilated below; anthers linear-oblong, awnless, attached by their backs to the filaments, the sacs opening by terminal pores or chinks. Disk obscurely 8-crenate. Ovary mostly 4-celled; ovules numerous; style filiform; stigma 4-lobed or 4-toothed. Capsule subglobose or ovoid, 4-celled, septicidally 4-valved, many-seeded. Seeds slender, the testa membranous, prolonged at both ends. Parts of the flower rarely in 5's. [Named in honor of Archibald Menzies, surgeon and naturalist, died 1842.]

About 7 species, natives of North America and Japan. Besides the following, 2 others occur in the northwestern parts of North America.

Filaments glabrous; seeds pointed at each end. 1. *M. pilosa.*
Filaments pubescent below; seeds long-appendaged at each end. 2. *M. glabella.*

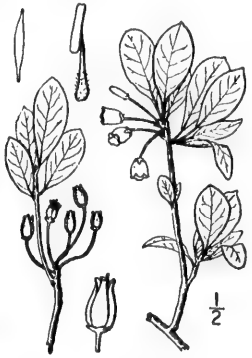
1. Menziesia pilòsa (Michx.) Pers. Alleghany Menziesia. (Fig. 2752.)

Azalea pilosa Michx. in Lam. Journ. Nat. Hist. 1: 410. 1792.
Menziesia pilosa Pers. Syn. 1: 420. 1805.
Menziesia globularis Salisb. Parad. Lond. 44. 1806.
M. ferruginea var. *globularis* Sims, Bot. Mag. *pl. 1571.* 1813.

A shrub, 2°–6° high, the twigs more or less chaffy and with stiff hairs. Leaves oval, oblong or obovate, thin, obtuse or acutish and glandular-mucronulate at the apex, narrowed at the base, rough-hairy above, pale, glaucescent and sometimes chaffy on the veins beneath, 1′–2′ long, the margins ciliate; petioles 2″–5″ long, pubescent; flowers few in the umbels, drooping; pedicels filiform, glandular, ½′–1′ long; calyx-lobes short and broad, hirsute-ciliate; corolla urn-shaped or globose-ovoid, 2″–3″ long; filaments glabrous; capsule ovoid, about 2″ high, erect, glandular-bristly; seeds pointed at each end.

In mountain woods, Pennsylvania to Georgia. May-June.

2. Menziesia glabélla A. Gray. Smooth Menziesia. (Fig. 2753.)



Menziesia glabella A. Gray, Syn. Fl. N. A. 2: Part 1, 39. 1878.

Similar to the preceding species. Leaves obovate, obtuse and glandular-mucronulate at the apex, pale, glaucous and glabrous or very nearly so beneath, sparingly pubescent above, 9″–18″ long, the margins ciliolate; flowers 1–5 in the umbels, spreading, becoming erect; pedicels ½′–1′ long, glandular; calyx-lobes short and broad, ciliate and pubescent; corolla urn-shaped, about 2″ long; filaments pubescent below; capsule oblong or obovoid, erect, about 2″ high, glabrous; seeds long-appendaged at each end.

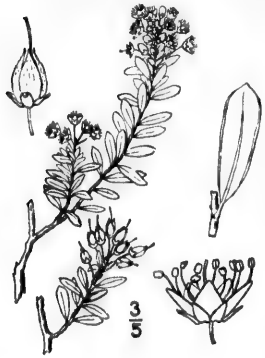
Minnesota Point, Lake Superior, west to Oregon and British Columbia. May-June.

6. DÉNDRIUM Desv. Journ. Bot. (II.) 1: 36. 1813.

[Leiophyllum Pers. Syn. 1: 477. 1805. Not Ehrh. 1780.]

A glabrous evergreen shrub, with coriaceous entire small mostly opposite leaves, and numerous small white or pinkish flowers, in terminal corymbs. Bracts coriaceous, persistent. Calyx 5-parted, the segments rigid, oblong-lanceolate, acute, persistent. Petals 5, sessile, ovate to obovate, spreading. Stamens 10, exserted; filaments filiform, glabrous; anthers small, globose-didymous, attached by their backs to the filaments, awnless, the sacs opening longitudinally. Disk 10-lobed. Ovary 2–5-celled; ovules numerous; style slender, straight; stigma simple, truncate. Capsule ovoid, septicidally 2–5-valved from the top. [Greek, a tree.]

A small genus of eastern North America.



1. Dendrium buxifòlium (Berg.) Desv. Sand Myrtle. (Fig. 2754.)

Ledum buxifolium Berg. Act. Upsal. 1777: *pl. 3, f. 1.* 1777.
Dendrium buxifolium Desv. Journ. Bot. (II) 1: 36. 1813.
Leiophyllum buxifolium Ell. Bot. S. C. & Ga. 1: 483. 1819–20.

A low shrub with box-like foliage, widely branching, 4′–18′ high. Leaves crowded, oblong or oval, thick, obtuse, dark green and shining above, lighter and black-dotted beneath, short-petioled, somewhat revolute-margined, 3″–7″ long, the midrib prominent, the lateral veins obscure; flowers several or numerous in short corymbs, about 2″ broad; anthers purple; pedicels filifor 3″–5″ long in fruit; capsule acute, slightly over 1″ high, glabrous, puberulent, or roughened with short processes

In dry, sandy pine-barrens, New Jersey to Florida. The same or a related species on the higher mountains of North Carolina. April-June.

7. CHAMAECÍSTUS OEder, Fl. Dan. *pl. 9.* 1761.

[LOISELEURIA Desv. Journ. Bot. (II) 1: 35. 1813.]

A low glabrous depressed straggling branched shrub, with small linear-oblong petioled obtuse entire coriaceous and evergreen leaves, and small solitary or few flowers on terminal erect pedicels. Calyx 5-parted, the segments ovate-lanceolate, persistent. Corolla broadly campanulate, with 5 obtuse imbricated lobes. Stamens 5, included; filaments slender, adnate to the corolla; anthers globose-didymous, dorsally attached to the filaments, longitudinally dehiscent. Disk obscurely 5-lobed. Ovary globose, 2–3-celled; style short, straight; stigma capitate; ovules numerous. Capsule subglobose, 2–3-celled, septicidally 2–3-valved, the valves 2-cleft. Seeds ovoid, the testa granular. [Greek, ground cistus.]

A monotypic genus of the colder parts of the northern hemisphere.

1. Chamaecistus procúmbens (L.) Kuntze. Alpine or Trailing Azalea. (Fig. 2755.)

Azalea procumbens L. Sp. Pl. 151. 1753.
Loiseleuria procumbens Desv. Journ. Bot. (II) 1: 35. 1813.
C. serpyllifolia S. F. Gray, Bot. Arr. Brit. Pl. 2: 401. 1821.
Chamaecistus procumbens Kuntze, Rev. Gen. Pl. 388. 1891.

Tufted, much branched, diffuse, branches 2′–4′ long. Leaves mostly opposite, rather crowded, dark green above, paler beneath, 2″–4″ long, the midrib very prominent on the lower side, the margins strongly revolute; petioles ½″ long or less; flowers 1–5 from terminal coriaceous buds; pedicels 3″–4″ long; corolla pink or white, about 2″ high, longer than the purplish sepals; capsule about 1″ in diameter.

Summits of the White Mountains, N. H.; Mt. Albert, Quebec; Labrador to arctic America and Alaska. Also in northern Europe and Asia. July–Aug.

8. KÁLMIA L. Sp. Pl. 391. 1753.

Erect branching shrubs, with entire evergreen coriaceous leaves, alternate, opposite, or verticillate in 3's. Flowers in umbels or corymbs, or solitary, or 2–3 together in the axils. Calyx 5-parted or 5-divided, the segments imbricated in the bud. Corolla saucer-shaped, the limb strongly 10-keeled in the bud, 5-lobed, with 10 pouches below the limb, the keels extending from the pouches to the lobes and sinuses. Stamens 10, shorter than the corolla; anthers oblong, awnless, the sacs opening by large terminal pores; filaments erect in the bud, soon curving outward, placing the anthers in the pouches of the corolla, straightening elastically when the flower is fully expanded. Disk 10-crenate. Ovary 5-celled; ovules numerous; style slender; stigma depressed-capitellate. Capsule subglobose, obscurely 5-lobed, 5-celled, septicidally 5-valved from the summit. Seeds small, subglobose. [Dedicated by Linnaeus to his pupil, Peter Kalm, 1715–1779, who travelled in America.]

Six known species, 5 of eastern North America, the other Cuban.

Flowers in mostly compound umbels or corymbs; twigs terete.
- Leaves oblong, mostly obtuse; flowers 3″–5″ broad. 1. *K. angustifolia.*
- Leaves elliptic or oval, acute at both ends; flowers 8″–12″ broad. 2. *K. latifolia.*

Flowers in simple terminal umbels; twigs 2-edged. 3. *K. glauca.*

Flowers mostly solitary in the axils; leaves and twigs hirsute. 4. *K. hirsuta.*

1. Kalmia angustifòlia L. Sheep-laurel. Lambkill. Wicky. (Fig. 2756.)

Kalmia angustifolia L. Sp. Pl. 391. 1753.

A shrub, 6′–3° high, with few nearly erect branches, and terete twigs. Leaves oblong or oblong-lanceolate, mostly opposite, or verticillate in 3's, obtuse or sometimes acute at the apex, narrowed at the base, petioled, glabrous, dark green above, light green beneath, 1′–2½′ long, 3″–10″ wide; young twigs and petioles often slightly glandular; flowers 3″–5″ broad, purple or crimson, numerous in lateral compound or simple corymbs; pedicels filiform, slightly glandular-canescent, 6″–12″ long, recurved in fruit; sepals ovate, acute, canescent, persistent; capsule depressed-globose, 5-lobed, canescent, 1½″–2″ in diameter, the apex impressed; filiform style long-persistent.

In moist soil, in swamps or on hillsides, Newfoundland to Hudson Bay, south to Georgia. Called also Calf-kill and Sheep-poison. June–July.

2. Kalmia latifòlia L. American or Mountain Laurel. Calico-bush (Fig. 2757.)

Kalmia latifolia L. Sp. Pl. 391. 1753.

A shrub with very stiff branches and terete twigs, often forming dense thickets, 10°–20° high, rarely becoming a tree with a maximum height of about 40° and trunk diameter of 18′. Leaves alternate, or some of them opposite, or rarely verticillate in 3's, petioled, glabrous, oval or elliptic, acute at both ends, flat, green on both sides, persistent, 2′–5′ long, ½′–1½′ wide; flowers 9″–12″ broad, pink to white, numerous and showy in compound terminal corymbs; pedicels bracted and 2-bracteolate at the base, slender, ½′–1½′ long, densely glandular, erect, even in fruit; sepals and corolla glandular; capsule depressed-globose, 5-lobed, glandular, 2″–3″ in diameter; calyx and filiform style long-persistent, the latter falling when the capsule begins to open.

In woods, preferring sandy or rocky soil, New Brunswick, Ontario, Ohio, to Florida and Louisiana. Wood very hard, brown; weight per cubic foot 44 lbs. Called also Clamoun, Spoonwood, Broad-leaved Kalmia, Ivy-bush. May–June.

Kalmia latifòlia myrtifòlia Rand, Rhodod. 125. 1876.

Low, compactly much branched, seldom over 3° high; leaves not over 1½′ long and 3″–4″ wide. Massachusetts.

3. Kalmia glaùca Ait. Pale or Swamp Laurel. (Fig. 2758.)

Kalmia glauca Ait. Hort. Kew. 2: 64. *pl. 8.* 1811.

A glabrous shrub, 6′–2° high, with erect or ascending branches, the twigs 2-edged. Leaves opposite or sometimes in 3's, very nearly sessile, oblong or linear-oblong; mostly obtuse at the apex, narrowed at the base, green above, white-glaucous beneath, ½′–2′ long, 2″–6″ wide, the margins revolute, often strongly so; flowers in simple umbels terminating the branches, few (1–13), purple, 5″–9″ broad; pedicels filiform, ½′–1½′ long, erect, even in fruit; sepals ovate, scarious-margined, acutish or obtuse, persistent; capsule depressed-globose, glabrous, about 2½″ in diameter.

In bogs, Newfoundland to Hudson Bay and Alaska, south to northern New Jersey, Pennsylvania, Michigan, in the Rocky Mountains to Colorado, and in the Sierra Nevada to California. Summer.

4. Kalmia hirsùta Walt. Hairy Laurel. (Fig. 2759.)

Kalmia hirsuta Walt. Fl. Car. 138. 1788.

A branching shrub, 1°–2° high, the branches ascending, hirsute. Leaves oblong or oblong-lanceolate, very nearly sessile, flat, or the margins slightly revolute, villous-hirsute, acute or obtusish, becoming glabrate in age, dark green above, lighter beneath, 3″–6″ long; flowers solitary, or rarely 2–3 together in the axils, rose-purple, 5″–9″ broad; pedicels very slender, nearly or quite glabrous; sepals ovate-lanceolate, acute, or lanceolate, hirsute or ciliate, longer than the capsule, at length deciduous; capsule depressed, about 1¼″ in diameter, glabrous.

In moist pine-barrens, eastern Virginia to Florida. May–Aug.

9. PHYLLÓDOCE Salisb. Parad. Lond. *pl. 36.* 1806.

Low branching more or less glandular shrubs, with small crowded linear obtuse coriaceous evergreen leaves. Flowers long-pedicelled, nodding, mostly pink, blue or purple, in terminal umbels. Pedicels bracted at the base. Calyx 5-parted, persistent. Corolla ovoid, contracted at the throat, 5-toothed. Stamens 10, included; filaments filiform; anthers attached to the filaments by their backs, oblong, obtuse, awnless, the sacs dehiscent by terminal oblique chinks. Disk obscurely lobed. Ovary 5-celled; ovules numerous; style filiform, included; stigma obscurely 5-lobed, or capitate. Capsule subglobose or globose-oblong, septicidally 5-valved to about the middle. Seeds minute, the testa coriaceous. [Greek, a sea nymph.]

Three species, natives of arctic and alpine regions of the northern hemisphere. Besides the following, two others occur in northwest America.

1. Phyllodoce coerùlea (L.) Gren. & Godr. Mountain Heath. (Fig. 2760.)

Andromeda coerulea L. Sp. Pl. 393. 1753.
A. taxifolia Pall. Fl. Ross. **1**: 54 *pl. 72. f. 2.* 1784.
Phyllodoce coerulea Gren. & Godr. Fl. France **2**: 434. 1850.
Menziesia taxifolia Wood, First Lessons, 185. 1856.
Bryanthus taxifolius A. Gray, Proc. Am. Acad. **7**: 368. 1868.

A shrub 4′–6′ high, the branches ascending. Leaves yew-like, 3″–5″ long, less than 1″ wide, articulated with the branches, crowded above; the margins acutish, scabrous or serrulate-ciliolate; pedicels erect, very glandular, 5″–8″ long in flower, elongating in fruit, solitary or 2–6 at the ends of the branches; corolla 4″–5″ long, about 2″ in diameter, pink or purple, heath-like; sepals lanceolate, acuminate, glandular; capsule erect, about 2″ high.

Summits of the higher mountains of Maine and New Hampshire; Mt. Albert, Quebec; Labrador and through arctic America to Alaska. Also in northern and alpine Europe and Asia. July–Aug.

10. CASSÌOPE D. Don, Edinb. New Phil. Journ. **17**: 157. 1834.

Low tufted branching heath-like evergreen shrubs, with small sessile densely imbricated or crowded, entire apparently veinless leaves, and terminal or axillary solitary peduncled white or pink nodding flowers. Sepals 4 or 5, imbricated at least in the bud, not bracted at the base, persistent, or at length deciduous. Corolla campanulate, 4-5-lobed or 4–5-parted, the lobes spreading or recurved. Stamens 8–10, included; filaments subulate, glabrous, anthers attached to the filaments near the apex, the sacs opening by large terminal pores and tipped with a recurved awn. Disk 10-crenate. Ovary 4–5-celled; ovules numerous; stigma simple. Capsule globose or ovoid, 4–5-valved, each valve 2-cleft at the apex. Seeds minute, numerous. [Name from Cassiope, mother of Andromeda.]

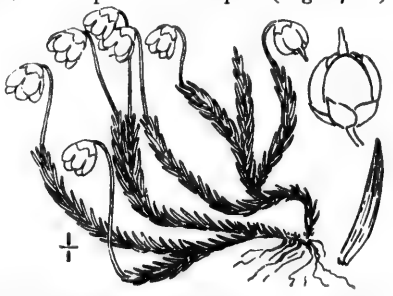
About 10 species, natives of the colder parts of the northern hemisphere. Besides the following, 3 others occur in the northwestern parts of North America.

Peduncle terminal; corolla 5-cleft; leaves subulate, crowded. 1. *C. hypnoides.*
Peduncles lateral; corolla 5-lobed; leaves thick, 4-ranked. 2. *C. tetragona.*

1. Cassiope hypnoides (L.) D. Don. Moss-plant. Cassiope. (Fig. 2761.)

Andromeda hypnoides L. Sp. Pl. 393. 1753.
Cassiope hypnoides D. Don, Edinb. New Phil. Journ. **17**: 157. 1834.

Densely tufted, glabrous, usually much branched, 1′–3′ high. Leaves linear-subulate, densely crowded and imbricated, somewhat spreading or appressed, acute, flat above, convex beneath, 1″–2″ long; flowers solitary, terminating the branches, 3″–4″ broad; peduncles very slender; erect, 4″–12″ long; corolla deeply 5-cleft, nearly white; style conic; capsule globose, about 1½″ in diameter, 2–3 times as long as the ovate calyx-lobes.



Summits of the higher mountains of New England and the Adirondacks of New York; Quebec and Labrador to arctic America. Also in arctic Europe and Asia. Plant with the aspect of a moss. Summer.

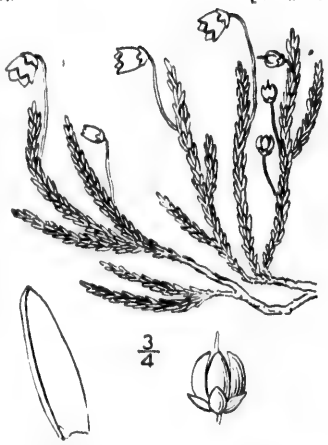
2. Cassiope tetragòna (L.) D. Don. Four-angled Cassiope. (Fig. 2762.)

Andromeda tetragona L. Sp. Pl. 393. 1753.

Cassiope tetragona D. Don, Edinb. New Phil. Journ. **17**: 158. 1834.

Tufted, much-branched, 4′–12′ high, the branches ascending or erect. Leaves imbricated in 4 rows, making the branches appear 4-sided, thick, ovate or ovate-oblong, closely appressed, channeled on the back, concave or nearly flat on the inner (upper) surface, acute or the lower obtuse, usually puberulent when young, 1″–1½″ long; peduncles several or numerous, lateral, ascending or erect, slender, 5″–12″ long; flowers 3″–4″ broad; corolla 5-lobed; style slender, slightly thickened below; capsule nearly globular, 1″–1½″ in diameter.

Labrador, Greenland and Hudson Bay to Alaska and Oregon. Also in arctic Asia. Summer.



11. LEUCÓTHOË D. Don, Edinb. New Phil. Journ. **17**: 159. 1834.

Shrubs, mostly tall, with alternate petioled entire or serrulate deciduous or persistent leaves, and small usually white bracted flowers in terminal or axillary racemes, jointed with their pedicels, or the pedicels jointed with the rachis. Sepals 5, distinct, imbricated, at least in the bud. Corolla cylindric or ovoid-urceolate, 5-toothed. Stamens 10, included; filaments subulate; anthers attached to the filaments near their bases, oblong, the sacs opening by terminal pores, obtuse, 2-mucronate or 1–2-awned at the apex. Disk 10-lobed. Ovary 5-celled; style slender; stigma capitate or 5-lobed; ovules numerous. Capsule depressed-globose, often 5 lobed, loculicidally 5-valved, the valves membranous, entire. Seeds numerous, minute, pendulous or spreading. [Name mythological.]

About 25 species, natives of North and South America and eastern Asia. Besides the following, another occurs in the southeastern States and one in California.

Racemes in the axils of persistent leaves of the previous season.
- Shoots puberulent; petioles 2″–4″ long; sepals imbricated in flower. 1. *L. axillaris.*
- Shoots glabrous; petioles 4″–8″ long; sepals not imbricated in flower. 2. *L. Catesbaei.*

Racemes terminating the branches; flowers appearing with or before the leaves.
- Racemes mostly recurved: capsule 5-lobed. 3. *L. recurva.*
- Racemes erect or spreading; capsule not lobed. 4. *L. racemosa.*

1. Leucothoë axillàris (Lam.) D. Don. Downy Leucothoë. (Fig. 2763.)

Andromeda axillaris Lam. Encycl. **1**: 157. 1783.
Leucothoë axillaris D. Don, Edinb. New Phil. Journ. **17**: 159. 1834.

A shrub, 2°–5° high, the twigs puberulent, at least when young. Leaves coriaceous, evergreen, oval to oblong-lanceolate, glabrous and dark green above, paler and sparsely beset with minute hairs beneath, acute or acuminate at the apex, narrowed or rarely rounded at the base, serrulate, at least near the apex, 2′–6′ long, ½′–1½′ wide; petioles usually pubescent; 2″–4″ long; racemes many-flowered, dense, catkin-like when expanding, sessile in the axils of the persistent leaves; bracts ovate, concave, borne near the base of the short pedicels; sepals imbricated even when expanded; anthers awnless; corolla nearly cylindric, about 3″ long; stigma depressed, 5-rayed.

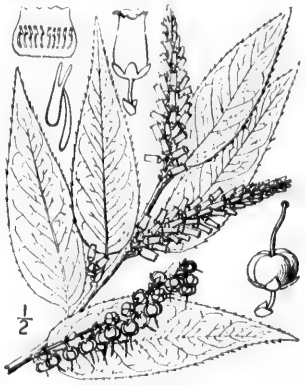
In moist woods, Virginia to Florida and Alabama, near the coast. April.

2. Leucothoë Catesbaèi (Walt.) A. Gray. Catesby's Leucothoë. (Fig. 2764.)

Andromeda Catesbaei Walt. Fl. Car. 137. 1788.
Andromeda spinulosa Pursh, Fl. Am. Sept. 293. 1814.
L. spinulosa G. Don, Gard. Dict. 3: 832. 1834.
Leucothoë Catesbaei A. Gray, Man. Ed. 2, 252. 1856.

A shrub, 3°–6° high, similar to the preceding species, the twigs glabrous. Leaves lanceolate or ovate-lanceolate, coriaceous and evergreen, acuminate at the apex, mostly rounded at the base, sharply serrulate with bristle-pointed teeth nearly all around, 3′–6′ long, 9″–18″ wide; petioles 4″–8″ long; racemes dense, axillary, many-flowered, catkin-like when expanding; bracts borne at the bases of the short petioles; sepals not at all or scarcely imbricated when the flower is expanded; corolla narrowly cylindric, about 2½″ long; capsule depressed, strongly 5-lobed, about 2″ in diameter.

Along streams, Virginia to East Tennessee and Georgia. April.



3. Leucothoë recúrva (Buckl.) A. Gray. Mountain Leucothoë. (Fig. 2765.)

Andromeda recurva Buckl. Amer. Journ. Sci. 45: 172. 1843.
Leucothoë recurva A. Gray, Man. Ed. 2, 252. 1856.

A widely branched shrub, 2°–10° high, similar to the following species. Leaves thin, deciduous, ovate or oval, often acuminate, pubescent on the veins beneath, 2′–4′ long; racemes terminating the branches, unfolding before the leaves, recurved, solitary or clustered; calyx 2-bracteolate, the bracts persistent; corolla about 3″ long; anther-sacs 1-awned; capsule much depressed, strongly 5-lobed, about 2″ in diameter and 1″ high; seeds broadly winged.

In dry woods, mountains of Virginia to Alabama. April–May.

4. Leucothoë racemòsa (L.) A. Gray. Swamp Leucothoë. (Fig. 2766.)

Andromeda racemosa L. Sp. Pl. 394. 1753.
Leucothoë spicata G. Don, Gard. Dict. 3: 832. 1834.
Leucothoë racemosa A. Gray, Man. Ed. 2, 252. 1856.

A shrub, 5°–12° high, with erect or divergent branches, terminal racemes, and glabrous or puberulent twigs. Leaves oblong to ovate, mostly acute at each end, thin, deciduous, short-petioled, glabrous, or with some short hairs above, pubescent, at least on the veins beneath, serrulate, 1′–3′ long, ½′–1′ wide; racemes solitary or clustered; flowers appearing with or before the leaves; calyx 2-bracteolate at the base, the bractlets firm, persistent; sepals much imbricated; pedicels about 1″ long, jointed with the rachis; corolla nearly cylindric, 3″–4″ long; anther-sacs 2-awned; style slender; stigma capitate; capsule depressed-globose, slightly grooved, 1½″ in diameter; seeds smooth, wingless.

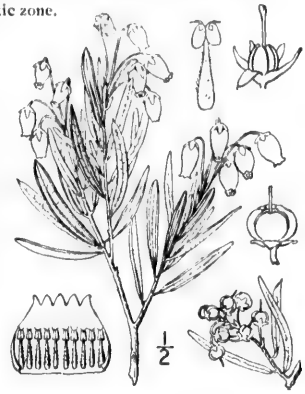
In swamps and moist thickets, Massachusetts to Pennsylvania, Florida and Louisiana, mostly near the coast. April–June.

12. ANDRÓMEDA L. Sp. Pl. 393. 1753.

A glabrous branching or rarely simple shrub. Leaves coriaceous, linear or oblong, entire, revolute-margined, evergreen, short-petioled, white-glaucous beneath. Flowers small,

white, drooping, in terminal umbels. Calyx deeply 5-parted, persistent, the lobes not imbricated. Corolla globose-urceolate, 5-toothed, the teeth recurved. Stamens 10, included; filaments bearded; anthers attached to the filaments at about the middle, ovate, obtuse, the sacs opening by large terminal pores, each with a reflexed awn. Disk 10-lobed. Ovary 5-celled; style columnar; stigma simple; ovules numerous. Capsule subglobose, 5-angled, loculicidally 5-valved, many-seeded, the top intruded. Seeds oval, spreading in all directions, the testa smooth, coriaceous, shining. [Named for Andromeda of mythology.]

A monotypic genus of the north temperate and subarctic zone.



1. Andromeda Polifòlia L. Wild Rosemary. Marsh Holy Rose. Moorwort. (Fig. 2767.)

Andromeda Polifolia L. Sp. Pl. 393. 1753.

A shrub, 1°–3° high, usually little branched, the foliage acid. Leaves linear, linear-oblong or lanceolate-oblong, sometimes slightly spatulate, acute or obtusish, mucronulate, narrowed at the base, dark green above, prominently white-glaucous beneath, 1′–2½′ long, 2″–4″ wide, the margins strongly revolute; petioles about 1″ long; umbels few-flowered, terminal; bracts small, ovate, persistent; pedicels 4″–6″ long; calyx-lobes triangular-ovate, acute; corolla 2″–3″ in diameter; capsule about 2″ in diameter, about as long as the persistent style.

In bogs, Labrador and Newfoundland through arctic America to Alaska, south to northern New Jersey, Pennsylvania, Michigan and British Columbia. Also in northern Europe and Asia. May-June.

13. PIERIS D. Don, Edinb. New Phil. Journ. 17: 159. 1834.

Shrubs or small trees. Leaves alternate, persistent or tardily deciduous, petioled, entire or serrulate. Flowers mostly white, in terminal or axillary bracted racemes or umbels, the pedicels commonly 1–3-bracteolate. Calyx deeply 5-parted, the lobes ovate, acute, valvate in the bud, soon spreading, persistent. Corolla urceolate-cylindric, 5-toothed, the teeth recurved. Stamens 10, included; filaments narrow, often pubescent or ciliate, 2-toothed or 2-spurred at or below the apex, or unappendaged; anthers oblong or ovoid, the sacs opening by large terminal oval pores, each with a slender awn on its back at the junction with the filament, or awnless. Disk 10-lobed. Ovary 5-celled; ovules numerous; style columnar; stigma truncate. Capsule globose or ovoid, 5-angled, 5-celled. Seeds numerous, linear-oblong, not winged, clavate or falcate, the testa smooth, membranous. [Name from one of the Muses.]

About 12 species, natives of eastern North America, Cuba, eastern Asia and the Himalayas.

Leaves coriaceous, evergreen, serrulate; flowers racemose. 1. *P. floribunda.*
Leaves coriaceous, evergreen, entire; flowers in axillary umbels. 2. *P. nitida.*
Leaves membranous, deciduous, entire; flowers in lateral umbels. 3. *P. Mariana.*

1. Pieris floribúnda (Pursh) Benth. & Hook. Mountain Fetter-bush. (Fig. 2768.)

Andromeda floribunda Pursh, Fl. Am. Sept. 293. 1814.
Portuna floribunda Nutt. Trans. Am. Phil. Soc. (II) 8: 268. 1843.
Pieris floribunda Benth. & Hook. Gen. Pl. 2: 588. 1876.

A shrub, 2°–6° high, with nearly erect bristly or strigose-pubescent very leafy branches. Leaves oblong to ovate-lanceolate, coriaceous, persistent, evergreen, serrulate and bristly-ciliate, glabrous above, black-dotted beneath, acute or acuminate at the apex, usually rounded or obtuse at the base, 1½′–3′ long, ½′–1′ wide; petioles 2″–4″ long, very bristly, at least when young; flowers white, in terminal clustered slender dense racemes, drooping, about 3½″ long; calyx-segments ovate-lanceolate, acute, valvate in the 5-angled bud; corolla slightly 5-angled, 5-saccate at the base; filaments unappendaged; capsule globose-ovoid, about 2″ high, longer than the slender style; seeds linear-oblong, the testa loose and cellular.

Mountains of Virginia to Georgia. May.

2. Pieris nítida (Bartr.) Benth. & Hook. Fetter-bush. (Fig. 2769.)

Andromeda nitida Bartr.; Marsh. Arb. Amer. 8. 1788.
Pieris nitida Benth. & Hook. Gen. Pl. 2: 588. 1876.

A glabrous shrub, 2°–6° high, the branches slender, ascending or erect, leafy, acutely angled, sparingly black-dotted. Leaves short-petioled, coriaceous, evergreen, oblong, oval, oblong-lanceolate, or obovate, acuminate or acute at the apex, narrowed at the base, somewhat black-dotted beneath, the margins entire, revolute, bordered by an intra-marginal nerve; flowers in axillary umbels, nodding or spreading; pedicels 2″–4″ long; calyx-segments ovate-lanceolate, rigid, purplish, valvate in the bud, soon spreading; corolla white or red, ovoid-cylindric, narrowed at the throat, 3″–4″ long; filaments 2-spurred; style thickened above the middle; capsule globose, about as long as the calyx-segments; seeds club-shaped.

In wet woods, southeastern Virginia to Florida and Louisiana. Also in Cuba. April–May.

3. Pieris Mariàna (L.) Benth. & Hook. Stagger-bush. (Fig. 2770.)

Andromeda Mariana L. Sp. Pl. 393. 1753.
Pieris Mariana Benth. & Hook. Gen. Pl. 2: 588. 1876.

A shrub, 1°–4° high, the branches nearly erect, slender, glabrous or nearly so, black-dotted. Leaves membranous, tardily deciduous, oval or oblong, glabrous above, sparingly pubescent on the veins and black-dotted beneath, acute or obtuse, narrowed or sometimes obtuse at the base, entire, 2′–3′ long, the margins slightly revolute; flowers nodding in lateral umbels on the nearly leafless branches of the preceding season, forming an elongated compound inflorescence; calyx-segments lanceolate, acuminate, almost foliaceous, deciduous; corolla ovoid-cylindric, white, or faintly pink, 5″–6″ long; filaments pubescent on the outer side, usually with 2 setose appendages below the summit; capsule ovoid-pyramidal, 1½″–2″ high, truncate, about as long as the sepals; seeds club-shaped.

In sandy soil, Rhode Island to Florida, mostly near the coast. Also in Tennessee and Arkansas (according to Gray). May–July.

14. XOLÍSMA Raf. Am. Month. Mag. 4: 193. 1819.

[LYONIA Nutt. Gen. 1: 266. 1818. Not Raf., 1808, nor Ell., 1817.]

Tall shrubs, or small trees, with terete twigs, alternate short-petioled leaves, and small mostly white flowers in terminal or axillary, usually panicled racemes or clusters. Calyx 4–5-lobed or 4–5-cleft, the lobes not imbricated, valvate. Corolla globose, or urceolate, pubescent, 4–5-toothed, the teeth recurved. Stamens 8–10, included; filaments flat, incurved, pubescent; anthers attached to the filaments near their bases, truncate, not awned, the sacs opening by large terminal pores. Disk 8–10-lobed. Ovary 4–5-celled; style columnar; stigma truncate; ovules numerous, pendulous, attached to the upper part of the placentae. Capsule globose or ovoid, 4–5-angled, loculicidally 4–5-valved, its apex intruded. Seeds numerous, elongated, the testa membranous, loose, reticulated. [Name unexplained.]

About 10 species, natives of eastern North America, the West Indies and Mexico. Besides the following, another occurs in the southern United States.

1. Xolisma ligústrina (L.) Britton. Privet Andromeda. (Fig. 2771.)

Vaccinium ligustrinum L. Sp. Pl. 351. 1753.
Andromeda ligustrina Muhl. Cat. 43. 1813.
Lyonia ligustrina DC. Prodr. 7: 599. 1839.
Xolisma ligustrina Britton, Mem. Torr. Club, 4: 135. 1894.

A much branched shrub, 3°–12° high, the twigs puberulent or glabrous. Leaves obovate, oblong, oval or ovate, deciduous, minutely serrulate or entire, acute at each end or abruptly acuminate at the apex, usually quite glabrous above, more or less pubescent, at least on the veins, or glabrous beneath, 1′–2½′ long; racemes numerous, mostly leafless, in terminal panicles or clusters, many-flowered; bracts small, caducous, pedicels single or clustered, 1″–3″ long, pubescent; calyx-lobes triangular-ovate, acute; corolla nearly globular, 1½″ in diameter; capsule depressed-globose, obtusely 5-angled, about 1½″ in diameter.

In swamps and wet soil, Canada (according to Pursh), New England and New York to Florida, west to Tennessee and Arkansas. A southeastern form has almost coriaceous leaves. May–July.

15. CHAMAEDÁPHNE Moench. Meth. 457. 1794.

[CASSANDRA D. Don, Edinb. New Phil. Journ. 17: 158. 1834.]

An erect shrub, with stiff slender terete branches, alternate coriaceous evergreen short-petioled narrow leaves, and white short-pedicelled secund flowers, solitary in the axils of the small upper leaves, forming terminal leafy racemes. Calyx of 5 distinct imbricated persistent sepals, bracted at the base. Corolla oblong-cylindric, narrowed at the throat, 5-toothed, the teeth recurved. Stamens 10, included; filaments subulate, glabrous; anther-sacs tapering upward into tubular beaks, not awned, opening by terminal pores. Disk 10-toothed. Ovary 5-celled, 5-grooved; stigma simple. Capsule depressed-globose, the epicarp 5-valved, separating at length from the 10-valved endocarp. [Greek, ground or low Daphne.]

A monotypic genus of the north temperate zone.

1. Chamaedaphne calyculàta (L.) Moench. Leather-leaf. Dwarf Cassandra. (Fig. 2772.)

Andromeda calyculata L. Sp. Pl. 394. 1753.
Chamaedaphne calyculata Moench, Meth. 457. 1794.
Cassandra calyculata D. Don, Edinb. New Phil. Journ. 17: 158. 1834.

A branching shrub, 2°–4° high. Leaves oblong or oblanceolate, thick, coriaceous, obtuse or acute, narrowed at the base, densely covered on both sides with minute round scurfy scales, at least when young, ½′–1½′ long, the margins obscurely denticulate; upper leaves gradually smaller, the uppermost reduced to floral bracts; pedicels 1″ long or less; corolla about 3″ long; capsule depressed-globose, 2″ in diameter, about twice as long as the ovate sepals.

In bogs and swamps, Newfoundland to Alaska, south to southern New Jersey, Georgia, Illinois, Michigan and British Columbia. Also in northern Europe and Asia. April–June.

16. OXYDÉNDRUM DC. Prodr. 7: 601. 1839.

A tree, with alternate petioled deciduous sour leaves, and very numerous white flowers, in terminal panicled racemes. Pedicels 2-bracteolate at or above the middle. Sepals 5, slightly imbricated in the bud, early expanded, persistent. Corolla ovoid-cylindric, minutely canescent, narrowed at the throat, tardily expanding, 5-toothed. Stamens 10, about as long as the corolla; filaments wider than the linear anthers; anther-sacs opening by long chinks. Ovary ovoid, 5-celled; ovules numerous, near the base of the cavities; style columnar; stigma simple. Disk 10-toothed. Capsule ovoid-pyramidal, 5-angled, 5-valved. Seeds ascending or erect, elongated, the testa reticulated, loose and extended at each end beyond the linear nucleus. [Greek, sour-tree.]

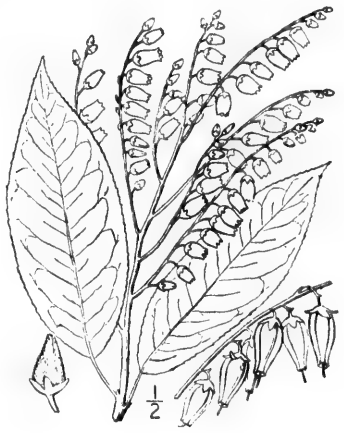
A monotypic genus of southeastern North America.

1. Oxydendrum arbòreum (L.) DC. Sour-wood. Sorrel-tree. (Fig. 2773.)

Andromeda arborea L. Sp. Pl. 394. 1753.
Oxydendrum arboreum DC. Prodr. 7: 601. 1839.

A smooth-barked tree, reaching a maximum height of about 60° and a trunk diameter of 15′. Leaves oblong, oval or oval-lanceolate, sharply serrulate, or entire, green and glabrous on both sides, finely reticulate-veined, acuminate at the apex, mostly narrowed at the base, 4′–6′ long, 1′–3′ wide; racemes numerous, long and slender, erect or curving, paniculed at the ends of the branches, the rachis and short pedicels canescent; flowers 3½″–3″ long; capsule 2″–3″ long, canescent, tipped by the persistent style, the pedicels curving.

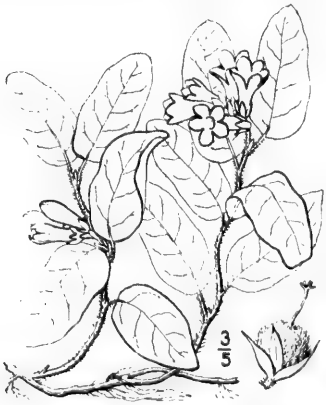
In woods, Ohio, Pennsylvania and Maryland to Alabama and Florida, both in the mountains and towards the coast. Wood hard, reddish-brown; weight per cubic foot 46 lbs. Elk-tree. June-July.



17. EPIGAÈA L. Sp. Pl. 395. 1753.

Prostrate slightly woody more or less hirsute branching shrubs, with alternate petioled coriaceous evergreen entire leaves. Flowers rather large, perfect, heteromorphous or dioecious, bracted, sessile, white or pink, fragrant, clustered at the ends of the branches. Sepals 5, oblong, persistent, dry, much imbricated. Corolla salverform, the limb 5-lobed (rarely 4 or 6-lobed). Stamens 10, about as long as the corolla-tube and attached to its base; filaments filiform; anthers linear-oblong, attached to the filaments below the middle. Disk 10-lobed. Ovary ovoid, hirsute, 5-lobed, 5-celled; ovules numerous; style columnar; stigma 5-lobed. Capsule depressed-globose, hirsute, slightly 5-lobed, at length loculicidally 5-valved. Seeds oval, the testa close and reticulated. [Greek, on the earth.]

Two species, the following of eastern North America, the other of Japan.



1. Epigaea rèpens L. Trailing Arbutus. Mayflower. Ground Laurel. (Fig. 2774.)

Epigaea repens L. Sp. Pl. 395. 1753.

Spreading on the ground, twigs hirsute, branches 6′–15′ long. Leaves oval or nearly orbicular, thick, acute or obtuse and mucronulate at the apex, cordate or rounded at the base, mostly glabrous above, more or less hirsute beneath, green both sides, 1′–3′ long, ½′–1½′ wide; petioles hirsute, ¼′–2′ long; flowers few or several in the clusters, 5″–8″ long, and nearly as broad when expanded; corolla-tube somewhat longer than the sepals.

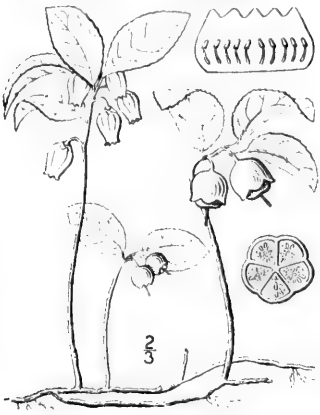
In sandy or rocky woods, especially under evergreen trees, Newfoundland to the Northwest Territory, south to Florida, Kentucky and Michigan. Often forms large patches. March-May.

18. GAULTHÈRIA L. Sp. Pl. 395. 1753.

Low or tall shrubs, with alternate coriaceous persistent evergreen leaves, and small axillary, solitary or racemose, white red or pink flowers. Calyx 5-parted or 5-cleft, persistent. Corolla urn-shaped or campanulate, 5-toothed or 5-lobed, the lobes recurved or spreading. Stamens 10, included, inserted at the base of the corolla; filaments dilated above the base; anther-sacs opening by a terminal pore, commonly awned. Stigma obtuse, entire. Disk 10-toothed. Ovary 5-celled, 5-lobed. Calyx becoming fleshy and at length surrounding the capsule, forming a berry-like fruit. [Named after Dr. Gaultier, of Quebec.]

About 100 species, mostly of the Andes of South America, a few North American and Asiatic. Besides the following 3 others occur on the Pacific Coast.

1. **Gaultheria procúmbens** L. Spring or Creeping Wintergreen. Checkerberry. (Fig. 2775.)



Gaultheria procumbens L. Sp. Pl. 395. 1753.

Nearly glabrous throughout, aromatic; stems slender, creeping or subterranean; branches erect, 2′–6′ high. Leaves mostly clustered at the ends of the branches, oval, oblong or obovate, obtuse or acute, narrowed at the base, short-petioled, the margins slightly revolute and serrate with low bristle-tipped teeth, dark green and shining above, pale beneath, 1′–2′ long; flowers usually solitary in the axils, on recurved peduncles 2″–4″ long, 2-bracteolate under the calyx; corolla ovoid-urceolate, white, 5-toothed, 2″–3″ long; fruit depressed-globose, slightly 5-lobed, bright red, 4″–6″ in diameter, mealy, very spicy in flavor.

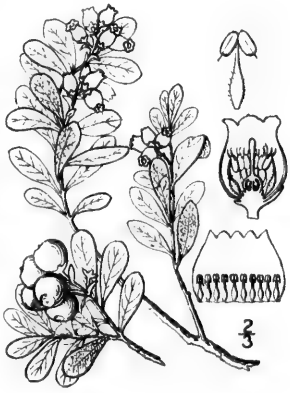
In woods, especially under evergreen trees, Newfoundland to Manitoba, south to southern New Jersey, Georgia and Michigan. June–Sept. Fruit ripe late in the autumn, remaining on the plant until spring. Other names are Box-, Ground-, Tea-, or Partridge-berry, Deer-, Hill-, Spice-berry, Ivory Plum, Mountain Tea.

19. ARCTOSTÁPHYLOS Adans. Fam. Pl. 2: 165. 1763.

Erect or spreading, low or tall shrubs (some western species small trees). Leaves alternate, petioled, firm or coriaceous, persistent evergreen. Flowers small, nodding, pedicelled, white or pink, in terminal racemes, panicles or clusters. Calyx 4–5-parted, persistent. Corolla globose, ovoid, urceolate or oblong-campanulate, 4–5-lobed, the lobes recurved, imbricated in the bud. Stamens 10, rarely 8, included; filaments short, subulate; anthers short, erect, introrse, with 2 recurved awns on the back, the sacs opening by a terminal pore. Disk 8–10-lobed. Ovary 4–10-celled; ovules solitary in the cavities; style slender. Fruit a drupe, with 4–10 seed-like nutlets coherent into a solid stone. [Greek, bear-berry.]

About 20 species, the following of the northern hemisphere, the others of western North America.

1. **Arctostaphylos Ùva-Úrsi** (L.) Spreng. Red Bearberry. Kinnikinic. (Fig. 2776.)



Arbutus Uva-Ursi L. Sp. Pl. 395. 1753.
Arctostaphylos Uva-Ursi Spreng. Syst. 2: 287. 1825.

Trailing or spreading on the ground, branched; branches 6′–24′ long, the twigs puberulent. Leaves spatulate, coriaceous, obtuse, entire, evergreen, glabrous or minutely puberulent toward the base, ½′–1′ long, 2″–5″ wide, finely reticulate-veined; petioles about 1″ long, puberulent; flowers few in short racemes; pedicels 1″–2″ long; corolla ovoid, constricted at the throat, white, about 2″ long; drupe globose, red, glabrous, insipid, rather dry, 3″–5″ in diameter, usually containing 5 coalescent nutlets, each 1-nerved on the back.

In dry, sandy or rocky soil, Labrador and arctic America to Alaska, south to southern New Jersey, Pennsylvania, Illinois, Michigan, Nebraska, Colorado and California. Also in Northern Europe and Asia. May-June. Called also Fox- or Meal-berry, Bear's Grape, Barren Myrtle or Bilberry.

20. MAIRÀNIA Neck. Elem. 1: 219. 1790.

[ARCTOUS Niedenzu, Engl. Bot. Jahrb. 11: 141. 1890.]

A low shrub, with shreddy bark, alternate thin deciduous leaves clustered toward the ends of the branches, and small white clustered pedicelled flowers. Calyx 4–5-parted. Corolla 4–5-toothed, the short teeth spreading or recurved. Stamens 8 or 10, included; anther-sacs with 2 recurved dorsal awns. Ovary 4–5-celled; ovules 1 in each cavity. Drupe globose, with 4 or 5 separate 1-seeded nutlets.

A monotypic genus of the arctic zone and high mountain summits.

1. Mairania alpina (L.) Desv. Alpine or Black Bearberry. (Fig. 2777.)

Arbutus alpina L. Sp. Pl. 395. 1753.
Mairania alpina Desv. Journ. Bot. (II) 1: 37. 1813.
Arctostaphylos alpina Spreng. Syst. 2: 287. 1825.
Arctous alpina Niedenzu, Engl. Bot. Jahrb. 11: 141. 1890.

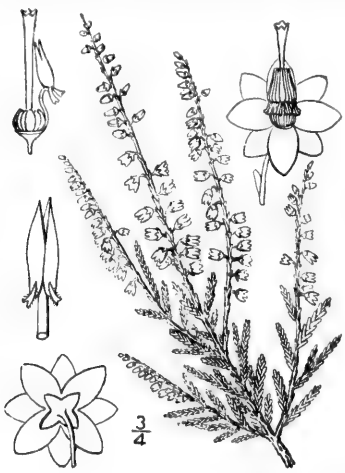
Tufted or depressed-prostrate; branches 2′–5′ high, the twigs glabrous or very nearly so. Leaves obovate, crenulate, conspicuously reticulate-veined, ciliate at least when young, ½′–1′ long, 3″–7″ wide; flowers few, appearing from scaly buds before or with the leaves; corolla white, ovoid, constricted at the throat; drupe black (or bright red, according to Macoun), juicy, 3″–5″ in diameter.

Summits of the higher mountains of New England; Quebec to Newfoundland, Alaska and British Columbia. Also in northern Europe and Asia. Summer.

21. CALLÙNA Salisb. Trans. Linn. Soc. 6: 317. 1802.

A low much branched evergreen shrub, with minute linear opposite crowded and imbricated leaves, and small white or pink flowers, in terminal one-sided dense spike-like racemes. Sepals 4, scarious, concave, obtuse, longer than and concealing the corolla. Corolla campanulate when expanded, 4-parted, slightly twisted, persistent, becoming scarious. Stamens 8, distinct; filaments short; anthers oblong, attached to the filaments by their backs, opening by a longitudinal slit, each sac with a dorsal reflexed appendage. Disk 8-lobed. Ovary depressed-globose, 8-angled; style slender; stigma capitellate. Capsule somewhat 4-sided, 4-celled, septicidally 4-valved, few-seeded. Seeds ovoid, pendulous, not winged. [Greek.]

A monotypic genus of Europe and Asia.



1. Calluna vulgàris (L.) Salisb. Ling. Heather. Moor. Besom. (Fig. 2778.)

Erica vulgaris L. Sp. Pl. 352. 1753.
C. vulgaris Salisb. Trans. Linn Soc. 6: 317. 1802.

A straggling shrub, the branches ascending, 3′–15′ high, the twigs puberulent or glabrous. Leaves sessile, about ½″ long, very numerous, imbricated in 4 rows, usually 2-auricled at the base, 3-angled, grooved on the back, glabrous, ciliate or canescent; calyx with 4 small bracts at the base; corolla about 1½″ long, nearly concealed by the 4 scarious pink or white sepals.

Sandy or rocky soil, Newfoundland to New Jersey. Naturalized or adventive from Europe. July–Sept.

Erica cinèrea L., the Scotch Heath, found at one spot on Nantucket Island, has an ovoid 4-toothed corolla, much longer than the calyx (about 3″ long) and linear leaves, mostly verticillate in 3's.

Erica Tétralix L., the Cross-leaved Heath, also on Nantucket, has a similar corolla and linear leaves verticillate in 4's. Both are waifs from Europe.

Family 5. **VACCINIÀCEAE** Lindl. Veg. Kingd. 757. 1847.

HUCKLEBERRY FAMILY.

Erect or prostrate shrubs, or small trees, with alternate simple leaves, and small clustered or solitary perfect flowers, the pedicels commonly bracted. Calyx-tube adnate to the ovary, the limb 4–5-lobed or 4–5-cleft. Corolla gamopetalous, 4–5-lobed, or rarely divided into separate petals, deciduous, globose, campanulate, urceolate, or tubular. Stamens twice as many as the corolla-lobes, epigynous, or inserted at the base of the corolla; filaments usually flattened, mostly short; anthers dorsally attached, 2-celled, the connective entire or 2-awned. Ovary inferior, 2–10-celled, crowned by the epigynous disk; style filiform; stigma simple, or minutely 4–5-lobed or 4–5-dentate; ovules solitary, or several in each cavity, anatropous. Fruit a berry or drupe in our genera, globose; cells 1–several-seeded, or the drupe containing several nutlets. Seeds compressed; testa bony; endosperm fleshy; embryo central; radicle near the hilum.

About 20 genera and 300 species of wide distribution, many South American species epiphytic.

Ovary 10-celled; fruit a berry-like drupe with 10 nutlets. 1. *Gaylussacia.*
Ovary 3–5-celled; fruit a many-seeded berry.
Corolla campanulate, cylindric, subglobose or urceolate.
Erect shrubs; ovary entirely inferior; berries normally not white. 2. *Vaccinium.*
Low trailing shrub; ovary half inferior; berry snow-white. 3. *Chiogenes.*
Corolla deeply 4-cleft or 4-divided, the lobes reflexed. 4. *Oxycoccus.*

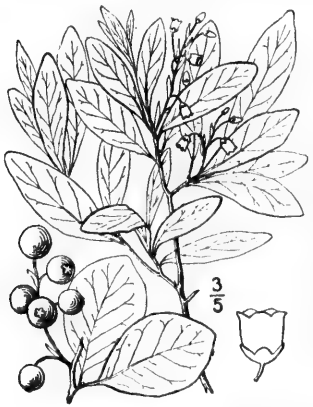
1. GAYLUSSÀCIA H.B.K. Nov. Gen. 3: 275. *pl. 257.* 1818.

[Adnaria Raf. Fl. Ludov. 56. 1817 ?]

Branching shrubs, with alternate entire or serrate leaves, and small white or pink flowers in lateral bracted racemes. Pedicels mostly 2-bracteolate. Calyx-tube short, obconic, or turbinate, the limb 5-lobed or 5-toothed, persistent. Corolla urn-shaped, or tubular-campanulate, the tube terete or 5-angled, the limb 5-lobed, the lobes erect or recurved. Stamens 10, equal, usually included; filaments short and distinct; anther-sacs tapering upward into tubes, awnless, opening by terminal pores or chinks. Fruit a berry-like drupe with 10 seed-like nutlets, each containing a single seed. [Named for the celebrated chemist, Gay-Lussac.]

About 40 American species. Besides the following, another occurs in the southern Alleghanies.

Leaves pale and glaucous beneath, resinous; fruit blue with a bloom. 1. *G. frondosa.*
Leaves green both sides, resinous; fruit black.
Bracts small, deciduous, mostly shorter than the pedicels. 2. *G. resinosa.*
Bracts oval, large, persistent, longer than the pedicels. 3. *G. dumosa.*
Leaves thick, evergreen, serrate, not resinous; bracts scale-like. 4. *G. brachycera.*



1. Gaylussacia frondòsa (L.) T. & G. Blue Tangle. Tangleberry. Dangleberry. (Fig. 2779.)

Vaccinium frondosum L. Sp. Pl. 351. 1753.
G. frondosa T. & G.; Torr. Fl. N. Y. 1: 449. 1843.

An erect shrub, 2°–4° high, with numerous spreading or ascending slender gray branches. Leaves oval to obovate, obtuse or retuse, entire, 1½′–2½′ long when mature, entire, usually thin, the lower surface glabrous or pubescent, pale or glaucous, and sprinkled with resinous globules, the upper surface green, usually glabrous; petioles about 1″ long; flowers few, greenish pink in loose racemes; bracts linear-oblong, shorter than the filiform mostly 2-bracteolate pedicels, deciduous; corolla globose-campanulate, 1½″ long; filaments glabrous, shorter than the anthers; fruit globose, dark blue with a glaucous bloom, about 4″ in diameter, sweet.

In moist woods, New Hampshire to Florida, Ohio, and Louisiana. May–June. Fruit ripe July–Aug.

2. Gaylussacia resinòsa (Ait.) T. & G. Black or High-bush Huckleberry. (Fig. 2780.)

Vaccinium resinosum Ait. Hort. Kew. 2: 12. 1789.
G. resinosa T. & G.; Torr. Fl. N. Y. 1: 449. 1843.

A shrub, 1°–3° high, with ascending or erect stiff grayish branches, the young shoots commonly pubescent. Leaves oval or oblong, rarely obovate, obtuse or acutish, entire, very resinous when young, mucronulate, glabrous or very nearly so and green on both sides, firm, 1′–2′ long; petioles about 1″ long; flowers few, pink or red, in short one-sided racemes; bracts small, deciduous, shorter than or equalling the usually 2-bracteolate pedicels; corolla ovoid-conic, 5-angled, becoming campanulate-cylindric, 2″–2½″ long; filaments ciliate; fruit black without bloom (rarely white), about 3″ in diameter, sweet but seedy.

In woods and thickets, preferring sandy soil, Newfoundland to Georgia, Manitoba, Wisconsin and Kentucky. May–June. Fruit ripe July–Aug.

3. Gaylussacia dumòsa (Andr.) T. & G. Dwarf or Bush Huckleberry. (Fig. 2781.)

Vaccinium dumosum Andr. Bot. Rep. 2: 112. 1799.
G. dumosa T. & G.; A. Gray, Man. 259. 1848.

A branching shrub, 1°–2° high, from a horizontal or ascending base, the branches nearly erect, usually leafless below, the young twigs pubescent or hirsute, glandular. Leaves oblong-obovate or oblanceolate, obtuse, mucronate, entire, firm or coriaceous, green both sides, shining when old, sparingly pubescent or glabrous, resinous, 1′–½′ long, sessile or nearly so; flowers white, pink or red, in rather loose racemes; bracts oval, foliaceous, persistent, pubescent, equalling or longer than the slender pubescent 2-bracteolate pedicels; corolla campanulate, 2″–2½″ long; filaments pubescent; calyx puberulent; fruit black, without bloom, 3″–4″ in diameter, watery and rather insipid.

In sandy swamps, Newfoundland to Florida, North Carolina and Louisiana. May–June. Fruit July–Aug.

Gaylussacia dumòsa hirtélla (Ait.) A. Gray, Man. 259. 1848.
Vaccinium hirtellum Ait. f. Hort. Kew. Ed. 2, 2: 357. 1811.
Pedicels and calyx hirsute. Virginia to Florida and Louisiana.

4. Gaylussacia brachýcera (Michx.) A. Gray. Box-Huckleberry. (Fig. 2782.)

Vaccinium brachycerum Michx. Fl. Bor. Am. 1: 234. 1803.
Vaccinium buxifolium Salisb. Parad. Lond. *pl. 4.* 1806.
Gaylussacia brachycera A. Gray, Man. 259. 1848.

A low branching shrub, 6′–15′ high, from a horizontal or ascending base, the branches erect, angular, the twigs glabrous or very nearly so. Leaves thick, very coriaceous, glabrous, not resinous, persistent, evergreen, oval or oblong, obtuse or acutish, ¼′–1′ long, serrate with low teeth, the margins somewhat revolute; petioles 1″ long or less; flowers few, white or pink in short racemes; bracts and bractlets scale-like, caducous; pedicels very short; corolla cylindric-ovoid, about 2″ long; filaments ciliate; fruit (according to A. Wood) light blue.

In dry woods, Delaware and Pennsylvania to Virginia. May.

2. VACCÍNIUM L. Sp. Pl. 349. 1753.

Branching shrubs (some species small trees) with alternate often coriaceous leaves, and small white pink or red flowers, in terminal or lateral racemes or clusters, or rarely solitary in the axils. Calyx-tube globose, hemispheric or turbinate, not angled, adnate to the ovary, the limb 4–5-toothed or 4–5-lobed, persistent. Corolla urn-shaped, campanulate or cylindric, rarely subglobose, its limb 4–5-toothed or 4–5-lobed. Stamens twice as many as the lobes of the corolla, distinct, the filaments short or elongated; anthers awned or awnless, upwardly prolonged into tubes, opening by terminal pores or chinks. Ovary 4–5-celled, or 8–10-celled by false partitions; ovules several or numerous in each cavity; style straight; stigma small. Fruit a many-seeded berry. [Latin, blueberry.]

About 125 species of wide geographic distribution. Besides the following some 11 others occur in southern and western North America.

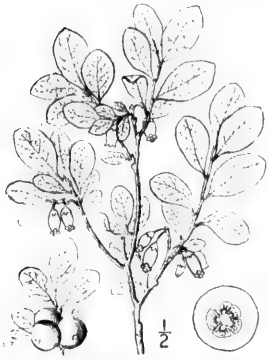
* **Corolla ovoid, globose, urn-shaped or cylindric, 4–5-toothed.**

Flowers solitary, or 2–4 together, on drooping pedicels; low shrubs.
  Most or all the flowers 4-parted and stamens 8. 1. *V. uliginosum.*
  Flowers all or nearly all 5-parted, and stamens 10.
    Shrub 3′–6′ high; leaves obovate or cuneate. 2. *V. caespitosum.*
    Shrubs 1°–12° high; leaves oval or oblong; northern species.
      Leaves serrulate, green both sides; berry purple-black. 3. *V. membranaceum.*
      Leaves entire or nearly so, pale beneath; berry blue with bloom. 4. *V. ovalifolium.*
Flowers fascicled or racemose, short-pedicelled; leaves deciduous.
  Corolla cylindric or nearly so, 2–3 times as long as thick.
    Flowers appearing before the leaves; berry black. 5. *V. virgatum.*
    Flowers appearing with the leaves; berry blue with a bloom. 6. *V. corymbosum.*
  Corolla urn-shaped, oblong or oblong-cylindric, 1–2 times as long as thick.
    Leaves not glaucous; glabrous or pubescent beneath.
      Leaves mostly entire, pubescent beneath.
        Shrub 3°–15° high; leaves oval, large; fruit black. 7. *V. atrococcum.*

Shrub 6′–2° high; leaves oblong, small; fruit blue. 8. *V. Canadense.*
Leaves serrulate, nearly or quite glabrous; low shrub; fruit blue. 9. *V. Pennsylvanicum.*
Leaves pale and glaucous beneath, mostly glabrous both sides.
Fruit black; shrub 6′–18′ high; leaves oblong or oblanceolate. 10. *V. nigrum.*
Fruit blue; shrubs 1°–6° high; leaves oblong, oval, obovate.
Leaves firm, mostly entire, berry about 3″ in diameter. 11. *V. vacillans.*
Leaves thin, sharply serrulate; berry 4″–6″ in diameter. 12. *V. pallidum.*

* * Corolla open-campanulate, 4-5-lobed.

Flowers 4-parted; leaves small, coriaceous, persistent; low shrub. 13. *V. Vitis-Idaea.*
Flowers 5-parted; leaves large, thin, deciduous; tall shrubs.
Flower not jointed with its pedicel; anthers exserted. 14. *V. stamineum.*
Flower jointed with its pedicel; anthers included; berry black. 15. *V. arboreum.*

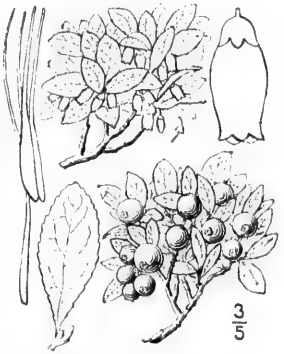


1. Vaccinium uliginòsum L. Great Bilberry. Bog Whortleberry. Bleaberry. (Fig. 2783.)

Vaccinium uliginosum L. Sp. Pl. 350. 1753.

A stiff much-branched shrub, 6′–24′ high. Leaves thick when mature, glabrous or nearly so on both sides, dull, pale or glaucous beneath, obovate, oblong, or oval, obtuse, or retuse, narrowed at the base, entire, nearly sessile, finely reticulate-veined, 5″–12″ long; flowers 2–4 together, or sometimes solitary near the ends of the branches, mostly shorter than the drooping pedicels; calyx 4-lobed (sometimes 5-lobed); corolla pink, ovoid or urn-shaped, 4–5-toothed; stamens 8–10; berry blue with a bloom, about 3″ in diameter, sweet.

Summits of the mountains of New England and the Adirondacks, mainly above timber-line; Labrador, Quebec and shores of Lake Superior, to Alaska. Also in northern Europe and Asia. June–July. Fruit ripe July–Aug.

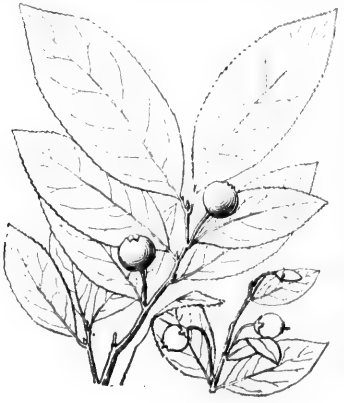


2. Vaccinium caespitòsum Michx. Dwarf Bilberry. (Fig. 2784.)

Vaccinium caespitosum Michx. Fl. Bor. Am. 1: 234. 1803.

A shrub, 3′–7′ high, much branched, nearly glabrous throughout. Leaves obovate or oblong-cuneate, obtuse or acute, 6″–12″ long, green and shining both sides, nearly sessile, serrulate with close bluntish teeth; flowers mostly solitary in the axils and longer than their drooping pedicels; calyx slightly 5-toothed (rarely 4-toothed); corolla obovoid or obovoid-oblong, pink or white, 5-toothed or rarely 4-toothed; stamens 10, rarely 8; berry blue with a bloom, sweet, about 3″ in diameter.

Upper Stillwater, Maine, at 100 feet altitude; summits of the White Mountains; New Brunswick to Labrador, west through subarctic America to Alaska, south in the Rocky Mountains to Colorado. June–July. Fruit ripe Aug.



3. Vaccinium membranàceum Dougl. Thin-leaved Bilberry. (Fig. 2785.)

Vaccinium myrtilloides Hook. Fl. Bor. Am. 2: 32. 1834. Not Michx. 1803.

Vaccinium membranaceum Dougl.; Hook. Fl. Bor. Am. 2: 32. As synonym. 1834.

A branching shrub, 1°–5° high, nearly glabrous throughout, the twigs slightly angled. Leaves oval, oblong or ovate, thin or membranous, green both sides, not shining, acutish to acuminate, short-petioled, sharply and finely serrulate, 1′–2′ long; flowers mostly solitary in the axils, their recurved pedicels becoming erect in fruit; calyx-limb entire or slightly toothed; corolla depressed-globose or globose-urceolate, greenish or purplish, mostly 5-toothed; stamens mostly 10; berry dark purple, rather acid.

In moist woods, northern Michigan; Oregon and British Columbia. June–July. Fruit ripe July–Aug.

4. Vaccinium ovalifòlium J. E. Smith. Tall or Oval-leaved Bilberry. (Fig. 2786.)

Vaccinium ovalifolium J. E. Smith in Rees' Cyclop. No. 2. 1817.

A straggling branched shrub, 3°–12° high, the branches slender; twigs glabrous, jointed, sharply angled. Leaves oval, short-petioled, glabrous on both sides, green above, pale and glaucous beneath, rounded at both ends, or somewhat narrowed at the base, thin, sometimes mucronulate, entire or very nearly so, 1′–2′ long; flowers commonly solitary in the axils, on rather short recurved pedicels; calyx-limb slightly toothed; corolla globose-ovoid; stamens 10; berry blue with a bloom, 4″–5″ in diameter.

Woods, Quebec to Michigan, Oregon and Alaska. Also in Japan. June–July. Fruit ripe July–Aug.

5. Vaccinium virgàtum Ait. Southern Black Huckleberry. (Fig. 2787.)

Vaccinium virgatum Ait. Hort. Kew. 2: 12. 1789.

A shrub, 3°–12° high, the branches slender, green, the young twigs puberulent. Leaves narrowly oval-oblong, broadest at the middle, mucronate, short-petioled, entire, green and glabrous above, pale or glaucous beneath, veins pubescent, thick when old, 1′–2½′ long, ½′–1′ wide, the ends narrowed; flowers in short racemes or clusters, appearing before the leaves, equalling or longer than their pedicels; bracts and bractlets small, deciduous; calyx 5-lobed; corolla nearly cylindric, 3″–4″ long, 1″–1½″ thick, white or light pink; stamens 10; berry black, with or without bloom, 2″–3″ in diameter.

In swamps, southern Virginia to Florida and Louisiana. April–May. Fruit ripe in July.

Vaccinium virgàtum tenéllum (Ait.) A. Gray, Syn. Fl. 2: Part 1, 22. 1878.

Vaccinium tenellum Ait. Hort. Kew. 2: 12. 1789.

Low, mostly less than 2° high; leaves smaller, narrower, ½′–1½′ long; flowers white, or nearly so, 2″–3″ long. Probably a distinct species. Southern Virginia to Arkansas, Florida and Alabama.

6. Vaccinium corymbòsum L. High-bush or Tall Blueberry. (Fig. 2788.)

Vaccinium corymbosum L. Sp. Pl. 350. 1753.
V. amoenum Ait. Hort. Kew. 2: 12. 1789.

A shrub, 6°–15° high; branches stiff; twigs terete, minutely warty, greenish-brown, puberulent, or glabrous. Leaves oval or oblong, mostly acute at each end, usually entire, sometimes ciliate, green and glabrous above, paler and often pubescent at least on the veins beneath, short-petioled, 1′–3′ long, ½′–1½′ wide; flowers in short racemes, appearing with the leaves, equalling or longer than their pedicels; bracts oblong or oval, deciduous; calyx 5-lobed; corolla cylindric, or slightly constricted at the throat, white or faintly pink, 3″–6″ long, 1½″–3″ thick, 5-toothed (rarely 5-lobed); stamens 10; berry blue with a bloom, 3″–4″ in diameter, pleasantly acid.

In swamps, thickets and woods, Newfoundland to Virginia, west to Minnesota and Louisiana. May–June. Fruit ripe July–Aug. Called also Swamp Blueberry. The late market blueberry.

7. Vaccinium atrocóccum (A. Gray) Heller. Black Blueberry. (Fig. 2789.)

Vaccinium disomorphum Bigel. Fl. Bost. Ed. 2, 151. 1824. Not Michx. 1803.
Vaccinium corymbosum var. *atrococcum* A. Gray, Man. Ed. 5, 292. 1867.
V. atrococcum Heller, Bull. Torr. Club, 21: 24. 1894.

A branching shrub with shreddy bark, 3°–10° high, similar to the two preceding species, the branches green, minutely warty, the young twigs pubescent. Leaves oval or oblong, dark green above, light green and densely pubescent beneath even when old, entire, usually acute at both ends, mucronate, thick, 1½′–3′ long, ½′–1½′ wide; flowers in short racemes, appearing with the leaves, about the length of their slender pedicels; bracts and bractlets caducous; calyx 5-lobed; corolla short-cylindric or ovoid, pink or red, 2″–3″ long, about 1½″ thick, 5-toothed, constricted at throat; berry black, without bloom, sweet, 3″–5″ in diameter.

In swamps and wet woods, New Brunswick and Ontario to New Jersey and Pennsylvania. May-June. Fruit ripe July-Aug.

8. Vaccinium Canadénse Richards. Canada Blueberry. (Fig. 2790.)

V. Canadense Richards. App. Frank. Journ. 2, 12. 1823.

A low pubescent branching shrub, 6′–2° high. Leaves oblong, oblong-lanceolate or narrowly elliptic, pubescent, at least beneath, entire, acute at the apex, narrowed at the base, 1′–1½′ long, 4″–6″ wide; flowers few in the clusters, which are sometimes numerous on naked branches, appearing with the leaves; pedicels usually shorter than the flowers; corolla oblong-campanulate, greenish white, about 2″ long and 1¼″ thick; berry blue with a bloom (rarely white), sweet, 2½″–3″ in diameter.

In moist places, Labrador to the Northwest Territory, south in the mountains to Virginia, and to Illinois and Michigan. May-June. Fruit ripe July-Aug.

9. Vaccinium Pennsylvánicum Lam. Dwarf, Sugar or Low-bush Blueberry. (Fig. 2791.)

V. Pennsylvanicum Lam. Encycl. 1: 74. 1783.

A low branching shrub, 6′–2° high, similar to the preceding species, but with green warty branches and nearly or quite glabrous throughout. Leaves oblong or oblong-lanceolate, green and glabrous on both sides or slightly pubescent on the veins beneath, sharply serrulate, acute at both ends, 9″–18″ long, 3″–6″ wide; flowers few in the clusters, longer than the very short pedicels; corolla oblong-campanulate, slightly constricted at the throat, 2″–2½″ long, about 1½″ thick, white or pinkish; berry blue with a bloom, very sweet, 3″–5″ in diameter.

In dry, rocky or sandy soil, Newfoundland to the Northwest Territory, south to southern New Jersey, Illinois and Michigan. May-June. Fruit ripe June-July. The early market blueberry.

Vaccinium Pennsylvánicum angustifólium (Ait.) A. Gray, Man. 261. 1848.
Vaccinium angustifolium Ait. Hort. Kew. 2: 11. 1789.
Leaves narrower, 1″–1½″ wide. Summits of the White Mountains, and the Adirondacks; Quebec to the north shore of Lake Superior and arctic America.

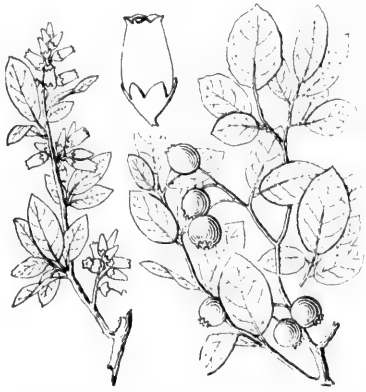
10. Vaccinium nigrum (Wood) Britton. Low Black Blueberry. (Fig. 2792.)

Vaccinium Pennsylvanicum var. *nigrum* Wood, Bot. & Flor. 199. 1873.
V. nigrum Britton, Mem. Torr. Club, 5: 252. 1894.

Similar to *V. Pennsylvanicum* and often growing with it, 6′–12′ high, the twigs glabrous. Leaves oblong, oblanceolate or obovate, acute at the apex, narrowed or rounded at the base, finely serrulate, very nearly sessile, ½′–1′ long, 3″–6″ wide, glabrous on both sides, green above, pale and glaucous beneath; flowers few in the clusters, longer than their pedicels; corolla globose-ovoid, very little constricted at the throat, white or cream color, about 2″ long, 1½″ thick; berry black, without bloom, about 3″ in diameter.

In dry rocky soil, Massachusetts to New Jersey, Pennsylvania and Michigan. Blooms earlier than *V. Pennsylvanicum*. May. Fruit ripe in July.

11. Vaccinium vacillans Kalm. Low Blueberry. Blue Huckleberry. (Fig. 2793.)



V. vacillans Kalm; Torr. Fl. N. Y. 1: 444. 1843.

A stiff branching shrub, 6′–4° high, with glabrous yellowish-green warty branches and twigs. Leaves obovate, oval, or broadly oblong, acute or obtuse and usually mucronulate, narrowed or rounded at the base, firm, glabrous on both sides, entire, or sparingly serrulate, pale, glaucous and finely reticulate-veined beneath, 1′–2½′ long, ½′–1¼′ wide; flowers several or few in the clusters which are sometimes racemose on naked branches, longer than or equalling their pedicels; corolla oblong-cylindric, somewhat constricted at the throat, pink, 2″–3″ long, 1½″–2″ thick; berry blue with a bloom, sweet, 2″–3½″ in diameter.

In dry soil, Maine (?) and New Hampshire to Ontario and Michigan, south to North Carolina and Missouri. May–June. Fruit ripe July–Aug.

12. Vaccinium pállidum Ait. Pale or Mountain Blueberry. (Fig. 2794.)

V. pallidum Ait. Hort. Kew. 2: 10. 1789.
Vaccinium corymbosum var. *pallidum* A. Gray, Man. Ed. 5, 292. 1867.

A branching shrub, 2°–8° high, with glabrous green warty twigs. Leaves oval, ovate or oblong, rather thin when mature, acute or acuminate, narrowed or rounded at the base, short-petioled, glabrous and light green above, pale and slightly glaucous or sometimes pubescent on the veins beneath, serrulate, 1′–3′ long; flowers several or numerous in the clusters, about equalling their slender pedicels; corolla oblong-cylindric to urceolate, slightly constricted at the throat, greenish-pink, 2″–2½″ long, 1½″–2″ thick; berry blue, 4″–6″ in diameter, delicious.

In woods, mountains of Virginia to South Carolina. Fruit superior to all other blueberries. May–June. Berries ripe July–Aug.

13. Vaccinium Vitis-Idaèa L. Mountain Cranberry. Wind- or Cow-berry. (Fig. 2795.)

Vaccinium Vitis-Idaea L. Sp. Pl. 351. 1753.

A low evergreen shrub, with creeping stems, the branches erect, terete, 3′–8′ high, puberulent or glabrous. Leaves thick, coriaceous, persistent, crowded, green and somewhat shining above, paler and black-dotted beneath, quite glabrous, or minutely ciliate toward the base, obovate or oval, short-petioled, entire or sparingly serrulate, 3″–8″ long, the margins revolute; flowers in short terminal secund racemes or clusters, nodding, longer than their pedicels; bracts reddish, short-oblong, tardily deciduous; bractlets 2; calyx-limb 4-toothed; corolla white or pink, open-campanulate, 4-lobed; stamens 8; berries dark red, acid, 4″–5″ in diameter.

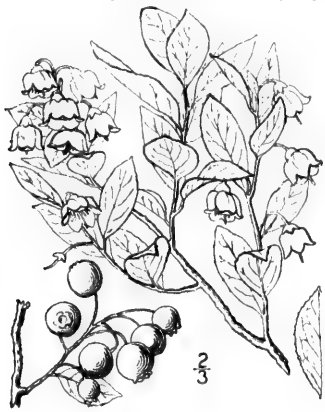
In rocky places, Essex Co., Mass., coast of Maine, higher mountains of New England to Labrador and arctic America, west to Lake Superior, British Columbia and Alaska. Ascends to 5300 ft. in the Adirondacks. Also in northern Europe and Asia. Fruit used as a substitute for cranberries. June–July. Other English names are Flowering Box, Ling- or Wine-berry, Red Whortleberry. Fruit ripe Aug.–Sept.

14. Vaccinium stamíneum L. Deerberry. Buckberry. (Fig. 2796.)

Vaccinium stamineum L. Sp. Pl. 350. 1753.

A divergently branched shrub, 2°–5° high, with pubescent or glabrous twigs. Leaves oval, oblong or rarely obovate, acute or sometimes acuminate at the apex, petioled, entire, firm, green above, pale and glaucous or slightly pubescent beneath, 1′–4′ long, ½′–1½′ wide; flowers very numerous in graceful leafy-bracted racemes, jointed with their spreading or pendulous filiform pedicels; corolla open-campanulate, purplish or yellowish green, deeply 5-cleft, 2″–3″ long, 3″–5″ broad; anthers and style exserted; bracts usually persistent; berry globose or pear-shaped, green or yellow, 4″–5″ in diameter, inedible.

In dry woods and thickets, Maine to southern Ontario and Minnesota, south to Florida, Kentucky and Louisiana. Squaw Huckleberry. April–June.



15. Vaccinium arbòreum Marsh. Farkleberry. (Fig. 2797.)

Vaccinium arboreum Marsh. Arb. Amer. 157. 1785.

A divergently branched shrub or small tree, reaching a maximum height of about 30°, and trunk diameter of 9′, the twigs glabrous or slightly pubescent. Leaves obovate or oval, obtuse or acute and mucronulate at the apex, narrowed at the base, short-petioled, shining and bright green above, duller, and sometimes sparingly pubescent beneath, entire or glandular-denticulate, coriaceous, 1′–2′ long, ½′–1′ wide; flowers pendulous in leafy-bracted racemes, slender-pedicelled; corolla white; campanulate, 5-lobed; anthers included; style exserted; bracts persistent; berry globose, black, about 3″ in diameter, inedible.

In dry sandy soil, North Carolina to Kentucky, southern Illinois and Indian Territory, south to Florida and Texas. Wood hard, reddish brown, weight per cubic foot 47 lbs. Called also Sparkleberry. May-June.

3. CHIÓGENES Salisb. Trans. Hort. Soc. Lond. 2: 94. 1815.

Creeping prostrate evergreen branching shrubs, with alternate 2-ranked oval or ovate small leaves, and solitary axillary small white flowers, on short recurved peduncles. Calyx-tube adnate to the lower half of the ovary, 2-bracted at the base, its limb 4-cleft. Corolla short-campanulate, 4-cleft, its lobes rounded. Stamens 8, included; filaments short, nearly orbicular, roughish; anthers not awned nor prolonged into tubes, each sac 2-cuspidate at the apex and opening by a slit down to the middle. Ovary 4-celled, surmounted by the 8-lobed disk; style short. Berry globose to oval, snow-white, many-seeded, rather mealy. [Greek, snow-born, in allusion to the berries.]

A monotypic genus of North America and Japan.

1. Chiogenes hispidula (L.) T. & G. Creeping Snowberry. (Fig. 2798.)

Vaccinium hispidulum L. Sp. Pl. 352. 1753.
C. serpyllifolia Salisb. Trans. Hort. Soc. 2: 94. 1815.
Chiogenes hispidula T. & G.; Torr. Fl. N. Y. 1: 450. 1843.
Chiogenes Japonica A. Gray, Syn. Fl. 2: Part 1, 26. 1878.

Branches strigose-pubescent, very slender, 3′–12′ long. Leaves coriaceous, persistent, oval, ovate, or slightly obovate, short-petioled, acute at the apex, rounded or narrowed at the base, dark green, glabrous above, entire, sprinkled with appressed stiff brownish hairs beneath and on the revolute margins, 2″–5″ long; flowers few, solitary, axillary, nodding, about 2″ long; berry aromatic, usually minutely bristly, crowned by the 4 calyx-teeth, becoming almost wholly inferior, about 3″ in diameter.

In cold wet woods and bogs, Newfoundland to British Columbia, south to North Carolina and Michigan. Ascends to 5200 ft. in New Hampshire. May–June. Fruit ripe Aug.–Sept. Flavor of Sweet Birch.

4. OXYCÓCCUS Hill, British Herbal, 324. 1756.

[SCHOLLERA Roth, Tent. Fl. Germ. 1: 170. 1788.]

Glabrous, or slightly pubescent, trailing or erect shrubs, with alternate nearly sessile leaves, and axillary or terminal, solitary or few, pendulous or cernuous, slender-peduncled red or pink flowers. Calyx-tube nearly hemispheric, adnate to the ovary, the limb 4-5-cleft, persistent. Corolla long-conic in the bud, 4-5-parted or 4-5-divided into separate or nearly separate petals, these narrow and revolute. Stamens 8 or 10, the filaments distinct; anthers connivent into a cone, long-exserted when the flower is expanded, upwardly prolonged into hollow tubes dehiscent by a pore at the apex. Ovary 4-5-celled; style slender or filiform. Fruit an oblong or globose many-seeded juicy red berry. [Greek, sour berry.]

Four species, natives of the northern hemisphere.

Trailing bog shrubs; leaves evergreen, entire; flowers 1–6 from terminal buds.
- Leaves ovate, acute, 2″–4″ long; berry globose. 1. *O. Oxycoccus.*
- Leaves oval or oblong, obtuse, 3″–7″ long; berry ovoid or oblong. 2. *O. macrocarpa.*

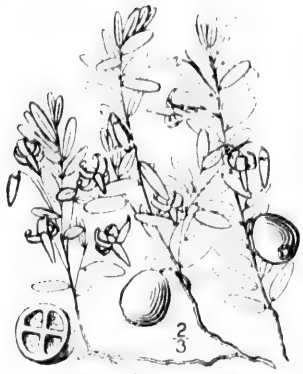
Erect mountain shrub; leaves deciduous, serrulate; flowers solitary, axillary. 3. *O. erythrocarpa.*

1. Oxycoccus Oxycóccus (L.) MacM. Small or European Cranberry. (Fig. 2799.)

Vaccinium Oxycoccus L. Sp. Pl. 351. 1753.
Oxycoccus palustris Pers. Syn. 1: 419. 1805.
Schollera Oxycoccus Roth, Fl. Germ. 1: 170. 1788.
O. Oxycoccus MacM. Bull. Torr. Club, 19: 15. 1892.

Stems very slender, creeping, rooting at the nodes, 6′–18′ long. Branches ascending or erect, 1′–6′ high; leaves thick, evergreen, ovate, entire, acutish at the apex, rounded or cordate at the base, dark green above, white beneath, 2″–4″ long, 1″–2″ wide, the margins revolute; flowers 1–6, mostly umbellate, rarely racemose, from terminal scaly buds, nodding, on erect mostly 2-bracteolate filiform pedicels; corolla pink, about 4″ broad, divided nearly to the base; filaments puberulent, about half the length of the anthers; berry globose, 3″–5″ in diameter, acid, often spotted when young.

In cold bogs, Labrador to Alaska, New Jersey, Michigan and British Columbia. Also in Europe and Asia. May–July. Fruit ripe Aug–Sept. Also called Bog- or Marsh-wort, Moss-, Bog-, Fen- or Moor-berry.



2. Oxycoccus macrocàrpus (Ait.) Pers. Large or American Cranberry. (Fig. 2800.)

Vaccinium macrocarpon Ait. Hort. Kew. 2: 13. *pl.* 7. 1789.
Oxycoccus macrocarpus Pers. Syn. 1: 419. 1805.

Similar to the preceding species, but stouter and larger, the branches often 8′ long. Leaves oval, oblong, or sometimes slightly obovate, obtuse at both ends, entire, 3″–7″ long, 1″–3″ wide, white or pale beneath, the margins revolute; flowers several in terminal somewhat racemose clusters, nodding on erect usually 2-bracteolate pedicels; corolla light pink, 4″–5″ broad, divided very nearly to the base; filaments puberulent, about one-third the length of the anthers; berry ovoid, oblong or nearly globose, acid, 4″–9″ long.

In bogs, Newfoundland to the Northwest Territory, south to North Carolina, West Virginia, Michigan and Minnesota. June–Aug. Fruit ripe Sept.–Oct.

3. Oxycoccus erythrocàrpus (Michx.) Pers. Southern Mountain Cranberry. (Fig. 2801.)

Vac. erythrocarpon Michx. Fl. Bor. Am. 1: 227. 1803.
Oxycoccus erythrocarpus Pers. Syn. 1: 419. 1805.

A divergently branched shrub, 1°–6° high, the twigs pubescent or glabrous. Leaves thin, green both sides, paler beneath than above, reticulate-veined, ovate, ovate-lanceolate, or ovate-oblong, acuminate at the apex, rounded, subcordate or the terminal ones narrowed at the base, finely serrulate with bristle-pointed teeth, flat, 1′–3′ long, ½′–1′ wide; flowers solitary in the axils; peduncles pendulous, filiform, usually minutely 2-bracteolate at the base and less than one-half as long as the leaves; corolla deeply 4-parted, red, about 5″ broad; filaments villous, about one-fourth the length of the anthers; berry globose, dark red when ripe, acid, 2″–3″ in diameter.

In woods, mountains of Virginia to Georgia. June–July. Fruit ripe July–Sept.

Family 6. **DIAPENSIÀCEAE** Link. Handb. 1: 595. 1829.

Diapensia Family.

Low tufted shrubs, or perennial scapose herbs, with alternate or basal simple exstipulate leaves, and small white pink or purple gamopetalous or polypetalous perfect and regular flowers, solitary in the axils, or racemose at the summit of scapes. Calyx 5-parted, persistent; sepals imbricated in the bud. Corolla 5-lobed, 5-cleft, or 5-parted, deciduous. Stamens 5, inserted on the throat of the corolla and alternate with its lobes, or connate, sometimes with as many alternating staminodia; anther-sacs longitudinally or transversely dehiscent; pollen-grains simple. Disk none. Ovary free from the calyx, superior, 3-celled; style mostly stout, persistent; stigma 3-lobed; ovules few or numerous in the cavities, anatropous or amphitropous. Capsule 3-celled, loculicidally 3-valved. Seeds minute, the testa loose or close; endosperm fleshy; embryo terete; cotyledons short; radicle elongated.

Six genera and about 8 species, natives of the northern hemisphere.

Low tufted evergreen shrubs; corolla gamopetalous.
- Tufted arctic-alpine shrub; flowers terminal, peduncled. — 1. *Diapensia.*
- Trailing shrub; flowers solitary, sessile. — 2. *Pyxidanthera.*

Tall scapose perennial herb; flowers spicate-racemose; petals separate. — 3. *Galax.*

1. DIAPÉNSIA L. Sp. Pl. 141. 1753.

Densely tufted glabrous low evergreen shrubs, with thick rather fleshy imbricated narrow leaves, and solitary terminal erect peduncled white or pink flowers. Calyx 2–4-bracted at the base, the sepals oval, obtuse, somewhat rigid. Corolla campanulate, tardily deciduous, 5-lobed, the lobes obtuse. Stamens 5, inserted at the sinuses of the corolla; filaments

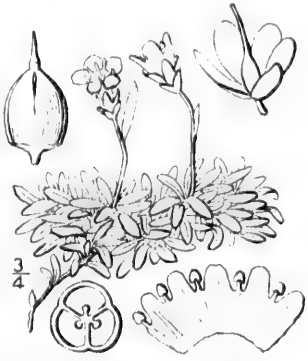
short and broad; anther-cells pointed, divergent, obliquely 2-valved; staminodia none. Style slender; ovules numerous in the cells, anatropous. Seeds oblong-cubic, the testa close, reticulated. [Greek, by fives, alluding to the stamens and corolla-lobes.]

Two species, 1 of wide distribution in the colder parts of the northern hemisphere, the other Himalayan.

1. Diapensia Lappónica L. Diapensia. (Fig. 2802.)

Diapensia Lapponica L. Sp. Pl. 141. 1753.

Glabrous, forming dense cushion-like tufts; stems simple or branched, erect or ascending, 1′–3′ high. Leaves crowded below, thick, spatulate, sessile, obtuse or acutish, often curved, entire, 3″–6″ long, about 1″ wide, the margins usually revolute; peduncles rather stout, becoming 1′–2′ long in fruit; sepals and bracts oval; corolla usually white, 3″–4″ long, its tube about the length of the sepals and of its oval or oblong obtuse lobes; capsule ovoid, 2″–3″ high.



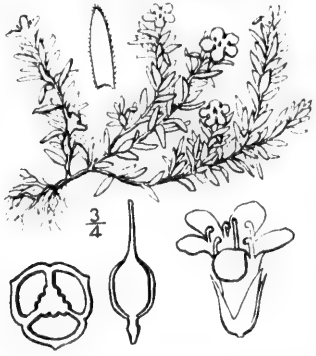
Summits of the Adirondack Mountains, and of the mountains of New England; Mt. Albert, Quebec; Labrador and arctic America. Also in northern and alpine Europe and Asia. June–July.

2. PYXIDANTHÈRA Michx. Fl. Bor. Am. 1: 152. *pl. 17.* 1803.

A creeping tufted much branched evergreen shrub, with small narrow alternate imbricated leaves, and numerous white or pinkish sessile flowers, solitary at the ends of the branches. Calyx bracted at the base, the sepals oblong, ciliate. Corolla short-campanulate, 5 lobed, tardily deciduous. Stamens inserted at the sinuses of the corolla; filaments broad and thick; anthers 2-celled, the sacs globose, transversely 2-valved, the lower valve cuspidate; staminodia none. Style columnar. Seeds globose-oblong, amphitropous, the testa black, cancellate. [Greek, box-anther.]

A monotypic genus of eastern North America.

1. Pyxidanthera barbulàta Michx. Pyxie. Flowering Moss. (Fig. 2803.)



Pyxidanthera barbulata Michx. Fl. Bor. Am. 1: 152. *pl. 17.* 1803.

Diapensia barbulata Ell. Bot. S. C. & Ga. 1: 229. 1817.

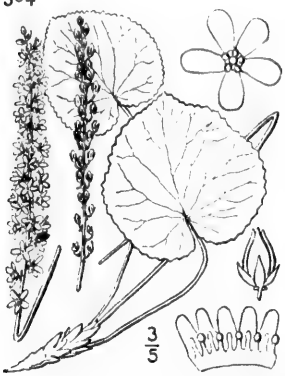
Glabrous, or sparingly pubescent, very leafy, growing in mats or large patches on the ground, the main branches sometimes 1° long. Leaves sessile, linear, lanceolate or linear-oblong, acuminate or subulate-tipped, entire, pubescent at the base when young, 2″–4″ long, about 1″ wide, densely imbricated toward the ends of the branches, more scattered below; flowers usually very numerous, 2″–3″ broad, mostly white; corolla-lobes cuneate-obovate, obtuse, retuse or eroded; capsule about 1″ high, globose, sessile, surrounded by the upper leaves.

In dry sandy pine-barrens, southern New Jersey and in North Carolina. Called also Pine-barren Beauty. Flowers sometimes pinkish. March–May.

3. GÀLAX L. Sp. Pl. 200. 1753.

An acaulescent perennial herb, with orbicular cordate crenate-dentate long-petioled basal leaves, and numerous small white flowers, spicate-racemose at the ends of tall mostly naked slender scapes. Calyx minutely 2-bracteolate at the base, 5-parted, the sepals nerveless. Corolla 5-divided, the petals oblong, entire, adnate to the bases of the monadelphous stamens. Stamen-tube 10-lobed at the summit, the lobes which are opposite the petals petaloid (staminodia), those alternate with the petals antheriferous; anthers nearly sessile, granular on the back, 1-celled, transversely 2-valved. Style very short. Seeds ovoid, the testa loose. [Greek, milk; name not characteristic of this genus.]

A monotypic genus of southeastern North America.



1. Galax aphýlla L. Galax. Galaxy. Beetle-weed. (Fig. 2804.)

Galax aphylla L. Sp. Pl. 200. 1753.

Scape 1½° high, terete, with red scaly bracts at the base and many red fibrous roots. Leaves orbicular, or broadly ovate, deeply cordate at the base with a rather narrow sinus, persistent, crenate-dentate or doubly denticulate with mucronulate or rounded teeth, shining, commonly shorter than their slender petioles, 1′–3′ in diameter; spike-like raceme dense, narrow, 2′–5′ long; flowers 1½″–2″ broad, spreading; bractlets deciduous; capsule ovoid, acute, erect, very short-pedicelled, 1″ long, slightly exceeding the lanceolate acutish sepals.

In dry woods, especially in the mountains, Virginia to Georgia. Ascends to 4500 ft. in North Carolina. Leaves bright green, shining. May–July.

Family 7. **PRIMULÀCEAE** Vent. T. bl. 2: 285. 1799.

PRIMROSE FAMILY.

Herbs, with alternate opposite verticillate or basal leaves, and perfect regular flowers, in terminal or axillary racemes, spikes, umbels or corymbs, or solitary in the axils or at the summit of a scape. Calyx free from the ovary (adnate to its lower part in *Samolus*), 4–9-parted or cleft (usually 5-parted), persistent or rarely deciduous. Corolla gamopetalous in our species (wanting in *Glaux*), 4–9-lobed or cleft (usually 5-cleft), rotate, funnelform, salverform or campanulate, deciduous. Stamens as many as the corolla-lobes and opposite them, hypogynous or rarely perigynous, inserted on the tube or base of the corolla; filaments distinct, or connate at the base; anthers introrse, attached by their backs to the filaments, 2-celled, the sacs longitudinally dehiscent. Disk obsolete, or none. Ovary superior (partly inferior in *Samolus*), 1-celled; placenta central, free; ovules anatropous, or mostly amphitropous; style 1; stigma simple, capitate, entire. Capsule 1-celled, 2–6-valved; rarely circumscissile or indehiscent, the valves erect or recurved, entire or 2-cleft. Seeds few or several, the testa adherent to the fleshy or horny copious endosperm; embryo small, straight; cotyledons obtuse.

About 28 genera and 350 species of wide distribution in the northern hemisphere, a few in southern south America and South Africa.

* Lobes or segments of the corolla erect or spreading, not reflexed.

Lobes of the corolla imbricated, at least in the bud.
- Ovary wholly superior.
  - Terrestrial scapose plants; leaves not pinnatifid.
    - Corolla-tube longer than the calyx; style slender. — 1. *Primula.*
    - Corolla-tube shorter than the calyx; style short. — 2. *Androsace.*
  - Aquatic leafy-stemmed plant; leaves finely pinnatifid. — 3. *Hottonia.*
- Ovary adnate to the calyx. — 4. *Samolus.*

Lobes of the corolla convolute or valvate, at least in the bud; (corolla wanting in no. 9).
- Capsule longitudinally dehiscent.
  - Corolla rotate, or rarely short-funnelform,
    - Stem leafy throughout; flowers yellow.
      - Staminodia none; corolla-lobes convolute; flowers axillary or racemed. — 5. *Lysimachia.*
      - Staminodia 5; each corolla-lobe curved around its stamen. — 6. *Steironema.*
      - Staminodia 5, tooth-like; flowers in axillary spike-like racemes or heads. — 7. *Naumburgia.*
    - Leaves whorled at the top of the stem; flowers white. — 8. *Trientalis.*
  - Corolla none; flowers minute, solitary in the axils. — 9. *Glaux.*
- Capsule circumscissile; flowers axillary.
  - Corolla longer than the calyx; stamens borne on its base. — 10. *Anagallis.*
  - Corolla shorter than the calyx; stamens borne on its tube. — 11. *Centunculus.*

* * Segments of the corolla reflexed; plants scapose. — 12. *Dodecatheon.*

1. **PRÍMULA** L. Sp. Pl. 142. 1753.

Perennial scapose herbs, with basal leaves, and small or large white red purple or yellow dimorphous flowers, umbellate, or in involucrate or bracted racemose whorls at the summit of a scape. Calyx tubular, funnelform or campanulate, persistent, often angled, 5-lobed, the lobes imbricated, erect or spreading. Corolla funnelform or salverform, the tube longer than the calyx in our species, the limb 5-cleft, the lobes imbricated, entire,

emarginate or 2-cleft. Stamens 5, inserted on the tube or at the throat of the corolla, included; filaments very short; anthers oblong, obtuse. Ovary superior, globose or ovoid; ovules numerous, amphitropous; style filiform; stigma capitate. Capsule oblong, ovoid or globose, 5-valved at the summit, many-seeded. Seeds peltate, the testa punctate. [Diminutive of the Latin primus, first, from the early blossoms.]

About 150 species, mostly of the northern hemisphere, a few in Java and at the Straits of Magellan. Besides the following, some 10 others occur in western and northwestern North America.

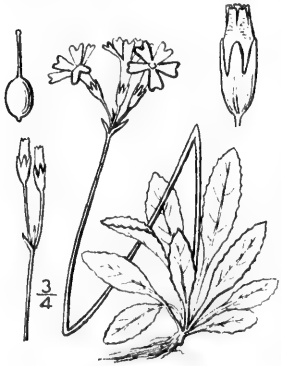
Leaves almost always white-mealy beneath; scape 4′–18′ high. 1. *P. farinosa.*
Leaves green both sides; scape 1′–6′ high.
  Leaves spatulate or obovate, denticulate. 2. *P. Mistissinica.*
  Leaves oval or lance-ovate, entire. 3. *P. Egaliksensis.*

1. Primula farinòsa L. Bird's-eye or Mealy Primrose. (Fig. 2805.)

Primula farinosa L. Sp. Pl. 143. 1753.

Leaves spatulate or oblong, obtuse at the apex, narrowed or somewhat cuneate at the base, tapering into petioles, or sessile, usually white-mealy beneath at least when young, green above, 1′–4′ long, 2″–6″ wide, the margins crenulate-denticulate; scape 4′–18′ high, 3–20-flowered; flowers umbellate; bracts of the involucre acute or acuminate; pedicels 2″–12″ long; calyx-lobes acute, often mealy; corolla pink or lilac, usually with a yellowish eye, the tube slightly longer than the calyx, the lobes cuneate, retuse or obcordate, 2″–3″ long; capsule narrowly oblong, erect, about 5″ long, longer than the calyx.

In moist places, Maine and Quebec to Greenland, west to the north shore of Lake Superior, the Northwest Territory and Alaska. Also in Europe and Asia. Summer.



2. Primula Mistassínica Michx. Mistassini or Dwarf Canadian Primrose. (Fig. 2806.)

Primula Mistassinica Michx. Fl. Bor. Am. 1: 124. 1803.

Similar to the preceding species, but smaller; scape very slender, 1′–6′ high. Leaves spatulate or obovate, green on both sides (rarely slightly mealy beneath), denticulate or repand, obtuse at the apex, narrowed or cuneate at the base, petioled or sessile, ½′–1½′ long, 1½″–5″ wide; flowers 2–8, umbellate; bracts of the involucre acute or acuminate; pedicels 2″–12″ long; corolla pink, or pale purple, with or without a yellow eye, the tube longer than the calyx; corolla-lobes obcordate, 1½″–2½″ long; capsule narrowly oblong, erect, 2½″–4″ high.

On wet banks, Maine to Greenland, west to central New York, Michigan and the Northwest Territory. Intergrades with the preceding species. Occurs also in northern Europe. Summer.

3. Primula Egaliksénsis Hornem. Greenland Primrose. (Fig. 2807.)

Primula Egaliksensis Hornem. Fl. Dan. *pl. 1511.* 1814.

Leaves green both sides, oval or lance-ovate, entire, or slightly undulate, obtuse or obtusish at the apex, ½′–1′ long, narrowed into petioles of about their own length; scape very slender, 2′–6′ high; umbels 2–6-flowered; bracts of the involucre lanceolate, acuminate; pedicels short, elongating in fruit; calyx-teeth short, acute; corolla-lobes 1″–2″ long, much shorter than the tube, obovate, sometimes cleft to the middle; capsule erect, about 3″ high, longer than the calyx.

Northern Labrador (Turner, according to A. Gray) and Greenland. Summer.

2. ANDRÓSACE L. Sp. Pl. 141. 1753.

Low annual or perennial herbs, our species scapose, with tufted small basal leaves, and terminal umbellate involucrate small white or pink flowers. Calyx persistent, 5-lobed, -cleft or -parted, the lobes erect in flower, sometimes spreading in fruit. Corolla salverform or funnelform, the tube short, not longer than the calyx, the limb 5-lobed, the lobes imbricated. Stamens 5, included, inserted on the tube of the corolla; filaments very short; anthers short, oblong, obtuse. Ovary superior, turbinate or globose; ovules few, or numerous, amphitropous; style short; stigma capitellate. Capsule turbinate, ovoid or globose, 5-valved from the apex, few-many-seeded. [Greek, man's shield, from the shape of the leaf in some species.]

About 50 species, natives of the northern hemisphere. Besides the following, 4 others occur in western and northwestern North America.

1. Androsace occidentàlis Pursh. Androsace. (Fig. 2808.)

Androsace occidentalis Pursh, Fl. Am. Sept. 137. 1814.

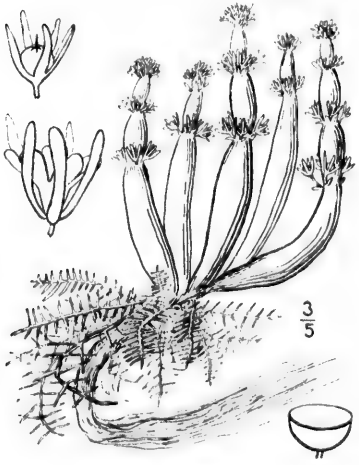
Annual, minutely pubescent, or glabrate; scapes filiform, solitary or numerous from fibrous roots, erect or ascending, or diffuse, 1′–3′ long. Leaves oblong or spatulate, obtuse, entire, sessile, 3″–8″ long; bracts of the involucre similar to the leaves but much smaller, 1″–3″ long; pedicels several or numerous, filiform, 2″–6″ long in flower, often becoming 1′ long in fruit; calyx-tube obpyramidal in fruit, the lobes ovate or triangular-lanceolate, acute, as long as or longer than the tube, green, becoming foliaceous; corolla very small, white, shorter than the calyx; calyx longer than the several-seeded capsule.

In dry soil, Minnesota and Illinois to Kansas and Arkansas, west to the Northwest Territory, Utah and New Mexico. April–June.

3. HOTTÒNIA L. Sp. Pl. 145. 1753.

Aquatic glabrous herbs, rooting in the mud, or floating, with large pinnatifid submersed crowded leaves, and small white or purplish flowers, racemose-verticillate on bracted hollow erect emersed peduncles. Calyx deeply 5-parted, the lobes linear, imbricated, persistent. Corolla salver-form, the tube short, the limb 5-parted, the lobes spreading, imbricated at least in the bud. Stamens 5, included, inserted on the tube of the corolla; filaments short; anthers oblong. Ovary ovoid; style filiform; stigma minute, capitate; ovules numerous, anatropous. Capsule subglobose, 5-valved. Seeds ellipsoid, numerous. [Dedicated to Peter Hotton, 1648–1709, professor at Leyden.]

Two species, the following of eastern North America, the other of Europe and eastern Asia.



1. Hottonia inflàta Ell. American Featherfoil. (Fig. 2809.)

Hottonia inflata Ell. Bot. S. C. & Ga. 1: 231. 1817.

Stem entirely submerged, spongy, densely leafy, branched, sometimes 2° long. Leaves sessile, or nearly so, ovate or oblong in outline, divided very nearly to the rachis into narrowly linear entire segments ½′–2′ long, ¼″–1″ wide; peduncles several in a cluster at the ends of the stem and branches, partly emersed, hollow, jointed, constricted at the joints, 3′–8′ high, the lower joint 2′–4′ long, sometimes 1′ thick, the others successively smaller; pedicels 2″–12″ long; flowers 2″–3″ long in verticils of 2–10 at the joints, subtended by linear bracts; corolla white, shorter than the calyx; capsule globose, about 1¼″ in diameter.

In shallow stagnant ponds, Massachusetts to central New York, south to Florida and Louisiana. June–Aug. Called also Water-feather, Water-Violet, Water-Yarrow.

4. SÁMOLUS L. Sp. Pl. 171. 1753.

Perennial glabrous herbs, with alternate entire leaves, or the basal ones rosulate. Flowers small, white, in terminal racemes or panicles in our species. Calyx persistent, its tube adnate to the ovary below, its limb 5-cleft. Corolla perigynous, subcampanulate, 5-lobed or 5-parted, the lobes obtuse, imbricated, at least in the bud. Stamens 5, inserted on the tube of the corolla, opposite its lobes, alternating with as many staminodia (these wanting in *S. ebracteatus*), filaments short; anthers cordate. Ovary partly inferior; ovules numerous, amphitropous. Capsule globose or ovoid, 5-valved from the summit. Seeds minute. [Name Celtic.]

About 10 species, of wide distribution, most abundant in South Africa and Australasia. Besides the following another occurs in the southern United States.

1. Samolus floribúndus H.B.K. Water Pimpernel. Brookweed. (Fig. 2810.)

Samolus floribundus H.B.K. Nov. Gen. 2: 224. 1817.
S. Valerandi var. *Americanus* A.Gray, Man. Ed. 2, 274. 1856.

Erect or ascending, branched, at least at the base, 6′–18′ high. Leaves membranous, 1′–3′ long, ½′–1′ wide, obovate, obtuse at the apex, narrowed at the base into petioles, the basal often in a rosulate tuft, the uppermost smaller and sometimes sessile; flowers commonly numerous, less than 1″ broad, in loose elongated paniced racemes; pedicels filiform, spreading, 4″–12″ long, bracteolate near the middle; calyx-lobes acute, shorter than the corolla; capsule 1″–1½″ in diameter, the 5 apical valves spreading at maturity.

In swamps and brooks, often in brackish soil, New Brunswick to Florida, west to British Columbia, Texas and California. Also in Mexico and South America. May–Sept.

Samolus Valerándi L., of Europe and Asia, a smaller plant with mostly simple racemes and larger flowers and capsules, has been found in ballast about Philadelphia.

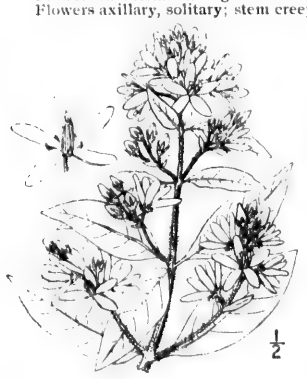
5. LYSIMÀCHIA L. Sp. Pl. 146. 1753.

Herbs, mostly perennial, with leafy stems. Leaves entire, often glandular-punctate; flowers in our species yellow, solitary in the axils, or racemose, corymbose or paniculate. Calyx 5–7-parted or 5–7-divided, persistent, free from the ovary. Corolla rotate or campanulate, 5–7-parted, the tube very short, the lobes convolute at least in the bud. Stamens 5–7, inserted on the throat of the corolla; filaments separate, or connate at the base; anthers oblong or oval; staminodia none. Ovary globose or ovoid; ovules few or several; style filiform; stigma obtuse. Capsule ovoid or globose, 2–5-valved, few or several-seeded. [Greek, loose-strife.]

About 70 species, mostly natives of the northern hemisphere, a few in Africa and Australia. Besides the following, 2 others occur in the southern United States.

Leaves verticillate in 3's–7's, or some of them rarely opposite.
- Corolla rotate-campanulate, pure yellow, 6″–12″ broad.
  - Flowers in terminal panicles; corolla-lobes glabrous. — 1. *L. vulgaris.*
  - Flowers axillary; corolla-lobes glandular-ciliolate. — 2. *L. punctata.*
- Corolla rotate, 4″–8″ broad, its lobes dark-streaked. — 3. *L. quadrifolia.*

Leaves opposite, or some of them rarely alternate.
- Flowers in a terminal virgate raceme; stem erect. — 4. *L. terrestris.*
- Flowers axillary, solitary; stem creeping. — 5. *L. Nummularia.*



1. Lysimachia vulgàris L. Golden or Yellow Loosestrife. (Fig. 2811.)

Lysimachia vulgaris L. Sp. Pl. 146. 1753.

Densely downy-pubescent; stem erect, branched, 2°–3½° high. Leaves verticillate in 3's or 4's, or some of them opposite, short-petioled, ovate-lanceolate or ovate, acute or acuminate at the apex, mostly narrowed at the base, 2′–4′ long, ½′–1½′ wide; flowers 6″–10″ broad, in terminal leafy panicles or compound corymbs; pedicels 2″–6″ long; sepals lanceolate or triangular-lanceolate, acute or acuminate; corolla yellow, rotate-campanulate, deeply parted, the segments glabrous; filaments monadelphous to about the middle, glandular; capsule about 1½″ in diameter, shorter than the sepals.

In fields and along roadsides, Maine to southern New York and Pennsylvania. Naturalized from Europe. Native also of Asia. Called also Willow-wort. June–Aug.

2. Lysimachia punctàta L. Spotted Loosestrife. (Fig. 2812.)

Lysimachia punctata L. Sp. Pl. 147. 1753.

Resembles the preceding species, usually densely pubescent, sometimes glabrate; stem simple or branched, 2°–3° high. Leaves verticillate in 3's or 4's or some of them opposite, oval or ovate-lanceolate, acute or obtuse at the apex, rounded or narrowed at the base, short-petioled, 1′–3′ long, ½′–1½′ wide, usually proportionately shorter and broader than those of *L. vulgaris;* flowers crowded in the upper axils or racemose-verticillate, yellow, 8″–10″ broad; pedicels 3″–10″ long; sepals lanceolate or oblong-lanceolate, acute or obtusish; corolla-segments glandular-ciliolate; filaments monadelphous at the base.

In waste places, Nova Scotia to southern New Jersey. Adventive from Europe. June–July.

3. Lysimachia quadrifòlia L. Crosswort. Whorled Loosestrife. (Fig. 2813.)

Lysimachia quadrifolia L. Sp. Pl. 147. 1753.

Pubescent, or glabrate, stem simple or rarely branched, slender, erect, 1°–3° high. Leaves verticillate in 3's–7's (commonly in 4's or 5's), or some, or very rarely all of them opposite, short-petioled or sessile, lanceolate, oblong or ovate, acute or acuminate at the apex, 1′–4′ long, 3″–1½′ wide, usually black-punctate, the uppermost sometimes very small; flowers axillary, 3″–6″ broad, borne on filiform spreading peduncles ½′–1½′ long; sepals narrowly lanceolate, acute or acuminate; corolla glabrous, dark-streaked or spotted; filaments monadelphous below; capsule nearly as long as the sepals.

In thickets, New Brunswick to Minnesota, south to Georgia and Wisconsin. June–Aug.

4. Lysimachia terréstris (L.) B.S.P. Bulb-bearing Loosestrife. (Fig. 2814.)

Viscum terrestre L. Sp. Pl. 1023. 1753.
Lysimachia stricta Ait. Hort. Kew. 1: 199. 1789.
Lysimachia stricta var. *producta* A. Gray, Syn. Fl. 2: Part 1, 63. 1878.
L. terrestris B.S.P. Prel. Cat. N. Y. 34. 1888.

Glabrous; stem erect, simple or branched, 8′–2° high, often bearing after flowering long bulblets (suppressed branches) in the axils. Leaves opposite or some of them rarely alternate, lanceolate or oblong-lanceolate, acute or acuminate at both ends, short-petioled, or sessile, usually black-punctate, 1′–3′ long, 2″–8″ wide; flowers 3″–5″ broad, in terminal bracted mostly elongated racemes; or some of them solitary or 2–3 together in the upper axils; pedicels slender or filiform, 5″–9″ long; sepals ovate or lanceolate, acute; corolla rotate, deeply parted, yellow with purple streaks or dots; filaments monadelphous below, glandular; capsule about 1¼″ in diameter, nearly as long as sepals.

In swamps and moist thickets, Newfoundland and Manitoba, south to Georgia and Arkansas. The plant sometimes produces no flowers, but bears the peculiar bulblets freely in the axils in the autumn, and in this condition was mistaken by Linnaeus for a terrestrial mistletoe. July–Sept.

5. Lysimachia Nummulària L.
Moneywort. Creeping Loosestrife.
(Fig. 2815.)

Lysimachia Nummularia L. Sp. Pl. 148. 1753.

Glabrous; stems creeping, sometimes 2° long, often rooting at the nodes. Leaves opposite, orbicular or broadly oval, obtuse at both ends or truncate or cordate at the base, manifestly petioled, ½′–1′ long, sparingly black-punctate; flowers solitary in the axils, 8″–12″ broad; sepals cordate-ovate to lanceolate, acute, half as long as the rotate deeply 5-lobed yellow and dark-dotted corolla; filaments glandular, monadelphous at the base; capsule shorter than the sepals.

In moist places, Newfoundland to New Jersey, Pennsylvania and Indiana. Naturalized from Europe. June–Aug. Lower leaves sometimes narrowed at the base. Also called Creeping-Jenny, and Herb-twopence.

6. STEIRONÈMA Raf. Ann. Gen. Phys. 7: 192. 1820.

Perennial leafy herbs, with opposite or verticillate simple entire leaves, and axillary slender-peduncled nodding or spreading yellow flowers. Calyx 5-parted, persistent, the segments valvate in the bud. Corolla rotate, deeply 5-parted, with no proper tube, the lobes cuspidate or erose-denticulate, each separately involute or convolute around its stamen. Stamens 5; filaments distinct, or united into a ring at the very base, granulose-glandular; anthers linear, becoming curved; staminodia 5, subulate, alternate with the stamens. Ovary globose; ovules few or numerous. Capsule 5-valved, several–many-seeded. Seeds margined or angled. [Greek, sterile threads, from the abortive stamens.]

About five species, natives of North America.

Leaves membranous, pinnately veined.
- Leaves ovate or ovate-lanceolate.
  - Stem erect; flowers 6″–12″ broad.
    - Petioles strongly ciliate; capsule longer than the calyx. — 1. *S. ciliatum.*
    - Petioles not ciliate, or slightly so at base; capsule not longer than the calyx. — 2. *S. fonsum.*
  - Stem reclined; flowers 3″–4″ broad; leaves not ciliate; petioles naked. — 3. *S. radicans.*
- Leaves lanceolate, oblong or linear; stem erect. — 4. *S. lanceolatum.*

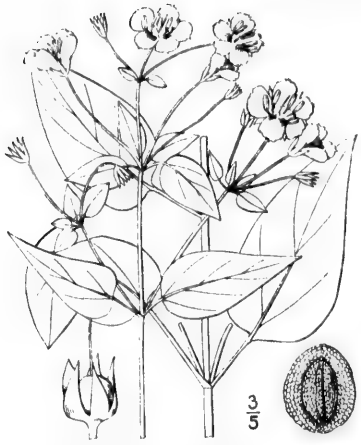
Leaves firm, linear, 1-nerved, the lateral veins obscure. — 5. *S. quadriflorum.*

1. Steironema ciliàtum (L.) Raf.
Fringed Loosestrife.
(Fig. 2816.)

Lysimachia ciliata L. Sp. Pl. 147. 1753.
Steironema ciliatum Raf. Ann. Gen. Phys. 7: 192. 1820.

Stems erect, simple or branched, slender, mostly glabrous, 1°–4° high. Leaves membranous, ovate, ovate-oblong, or ovate-lanceolate, pinnately veined, acute or acuminate at the apex, obtuse, truncate or cordate at the base, 2′–6′ long, ½′–3′ wide, the margins ciliolate; petioles ciliate, ¼′–½′ long; peduncles filiform, ½′–2′ long; calyx-segments lanceolate, acuminate, shorter than the erose-denticulate commonly mucronate corolla-segments; flowers 6″–12″ broad; capsule longer than the calyx.

In moist thickets, Nova Scotia to British Columbia, south to Georgia, Alabama, Nebraska, New Mexico and Arizona. Ascends to 6300 ft. in North Carolina. Naturalized in Europe. June–Aug.



3. Steironema radicans (Hook.) A. Gray. Trailing Loosestrife. (Fig. 2818.)

L. radicans Hook. Comp. Bot. Mag. 1: 177. 1836.
S. radicans A. Gray, Proc. Am. Acad. 12: 63. 1876.

Stem weak, at first erect, soon decumbent or reclined and often rooting at the joints, very slender, glabrous, much branched, 1°–3° long. Leaves membranous, pinnately veined, lanceolate to ovate-lanceolate, acute or acuminate at the apex, rounded or narrowed, but not cordate at the base, 1′–4′ long, ¼′–1′ wide; margins not ciliolate; petioles naked or very sparingly ciliolate, ¼′–1¼′ long; peduncles filiform, ½′–2′ long; calyx-segments ovate or lanceolate, acuminate, about equalling the erose-denticulate corolla-segments; flowers 3″–4″ broad; capsule about one-half as long as the calyx.

In swamps, Virginia and West Virginia to Arkansas and Louisiana. June–Aug.

2. Steironema tónsum (Wood) Bicknell. Southern Loosestrife. (Fig. 2817.)

L. ciliata var. *tonsa* Wood, Class-book, 505. 1863.
Steironema intermedium Kearney, Bull. Torr. Club, 21: 263. 1894.

Stem erect, 1°–2° high, slender, obtusely 4-angled, glabrous below, minutely glandular-puberulent above. Leaves 2′–3′ long, 10″–20″ wide, ovate to ovate-lanceolate, acute at the apex, obtuse or subcordate at the base, minutely ciliolate, otherwise glabrous, the upper much smaller; petioles slender, glabrous, or ciliate only at the base; panicle open, leafy; pedicels slender, 2–6 times as long as the flowers; calyx-segments lanceolate, very acute; corolla 9″–10″ broad, its segments cuspidate; capsule shorter than calyx.

On dry rocks, Virginia to Tennessee and Alabama. June–July.

4. Steironema lanceolàtum (Walt.) A. Gray. Lance-leaved Loosestrife. (Fig. 2819.)

Lysimachia lanceolata Walt. Fl. Car. 92. 1788.
L. hybrida Michx. Fl. Bor. Am. 1: 126. 1803.
Steironema lanceolatum A. Gray, Proc. Am. Acad. 12: 63. 1876.

Stem erect, slender, glabrous, simple or branched, 6′–3° high. Leaves lanceolate, linear or oblong-lanceolate, petioled or nearly sessile, membranous, pinnately veined, acute or acuminate at the apex, usually narrowed at the base, 1′–5′ long, 2″–10″ wide, the margins naked or ciliate; lower leaves shorter, often oblong or nearly orbicular; petioles 2″–8″ long, naked or ciliate; peduncles slender or filiform, ½′–1½′ long; calyx segments lanceolate, acute or acuminate, nearly as long as or exceeding the erose and cuspidate-pointed corolla-segments; flowers 5″–9″ broad; capsule nearly as long as the calyx-segments.

In moist soil, Maine to Minnesota, south to Florida, Louisiana and Arizona. June–Aug.

5. Steironema quadriflòrum (Sims) Hitchc. Prairie Moneywort. Linear-leaved Loosestrife. (Fig. 2820.)

L. quadriflora Sims, Bot. Mag. *pl. 660.* 1803.
L. longifolia Pursh, Fl. Am. Sept. 135. 1814.
Steironema longifolium A. Gray, Proc. Am. Acad. 12: 63. 1876.
Steironema quadriflorum Hitchc. Trans. St. Louis Acad. 5: 506. 1891.

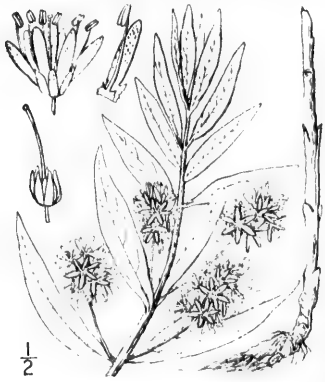
Stem erect, strict, glabrous, simple or little branched, 4-sided, 10′–24′ high. Stem-leaves all but the lowest sessile or very nearly so, firm, narrowly linear, 1-nerved, the lateral veins obscure, acute or acuminate at both ends, 1′–4′ long, 1″–2½″ wide, usually with smaller ones fascicled in the axils, glabrous, the margins slightly revolute; basal leaves oblong or linear-oblong, shorter, slender-petioled, acute or obtuse; peduncles filiform, ½′–1½′ long; calyx-segments lanceolate, acute, shorter than the cuspidate and slightly erose corolla-segments; flowers 8″–12″ broad, often somewhat clustered in 4's at the ends of the branches.

Along streams and lakes, West Virginia to western New York, Ontario, Kentucky, Iowa and Manitoba. June–July.

7. NAUMBÚRGIA Moench, Meth. Suppl. 23. 1802.

An erect perennial leafy herb, with slender rootstocks, opposite sessile lanceolate entire leaves, the lower much smaller or reduced to scales, and small yellow flowers in axillary peduncled spike-like racemes or heads. Calyx 5–7-divided, the sepals linear, slightly imbricated. Corolla deeply 5–7-parted, the tube exceedingly short, the segments narrow. Stamens 5–7, exserted; filaments slender, glabrous, slightly united at the base, alternating with as many small tooth-like staminodia at each sinus of the corolla. Ovary globose-ovoid; ovules few or several; style slender, equalling or exceeding the stamens; stigma capitate. Capsule 5–7-valved, few-seeded. Seeds not margined, somewhat angled.

A monotypic genus of the north temperate zone.



1. Naumburgia thyrsiflòra (L.) Duby. Tufted Loosestrife. (Fig. 2821.)

Lysimachia thyrsiflora L. Sp. Pl. 147. 1753.
Naumburgia guttata Moench, Meth. Suppl. 23. 1802.
Naumburgia thyrsiflora Duby, in DC. Prodr. 8: 60. 1844.

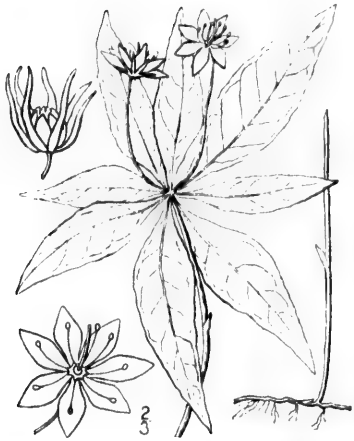
Glabrous or somewhat pubescent; stems simple, erect, often tufted, 1°–2½° high. Leaves 2′–4′ long, 4″–10″ wide, the upper lanceolate or oblong-lanceolate, acute or acuminate at the apex, narrowed at the base, the lower smaller, the lowest reduced to ovate scales or these deciduous; peduncles solitary in the axils, rather stout, ½′–1½′ long; racemes dense, oblong or ovoid, ½′–1′ long, spike-like; pedicels very short; flowers 2″–3″ broad; sepals usually spotted; corolla-segments yellow with black spots; style very slender; anthers oblong; capsule globose, black-spotted, when mature slightly longer than the sepals, shorter than the style.

In swamps, Nova Scotia to Alaska, south to southern New York, Pennsylvania, Missouri and Oregon. Also in Europe and Asia. May–July.

8. TRIENTÀLIS L. Sp. Pl. 344. 1753.

Glabrous low perennial herbs, with simple slender erect stems, and lanceolate ovate or oblong leaves mostly clustered in a verticil at the summit. Flowers few or solitary, terminal, slender-peduncled, small, white or pink, deeply 5–9- (mostly 7-) parted. Sepals narrow, persistent, spreading. Corolla rotate, its tube almost none, its segments convolute in the bud, acute or acuminate, entire; filaments united into a narrow ring at the base; anthers linear, recurved after anthesis, Staminodia none. Ovary globose; ovules numerous; style filiform. Capsule globose, 5-valved, many-seeded. Seeds trigonous or spherical. [Latin, one-third of a foot, referring to the height of the plant.]

Two species, of the northern hemisphere. The other occurs in northwestern America.



1. Trientalis Americàna Pursh. Starflower. Chickweed Wintergreen. (Fig. 2822.)

Trientalis Americana Pursh, Fl. Am. Sept. 256. 1814.

Rootstock horizontal or creeping, sending up simple stem-like branches 3′–9′ high, which are naked or scaly below, the leaves all in a verticil of 5–10 at the summit. Leaves membranous, lanceolate or oblong-lanceolate, acuminate at both ends, sessile or short-petioled, minutely crenulate, 1½′–4′ long, 4″–15″ wide; pedicels filiform, erect, 1′–2′ long; sepals narrowly lanceolate or subulate, cuspidate, about one-half as long as the oblong or somewhat obovate corolla-segments; flowers 4″–6″ broad; capsule shorter than the sepals.

In damp woods and thickets, Labrador to the Northwest Territory, south to southern New Jersey, Virginia, Illinois and Michigan. May–June.

9. GLAÙX L. Sp. Pl. 207. 1753.

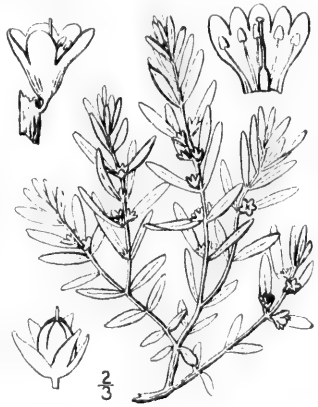
A small succulent perennial leafy herb, with opposite entire obtuse small fleshy leaves, and minute dimorphous nearly sessile axillary pink or white flowers. Calyx 5-parted, the lobes petaloid, imbricated in the bud, about equalling the campanulate tube. Corolla none. Stamens 5, inserted at the base of the calyx and alternate with its lobes; filaments subulate-filiform; anthers cordate, attached by their backs to the filaments. Ovary superior, ovoid, glandular; ovules few; style filiform; stigma capitellate. Capsule globose-ovoid, beaked, 5-valved at the top, few-seeded. Seeds ellipsoid. [Greek, sea-green.]

A monotypic genus of salt marshes, sea-beaches and other saline situations in the northern hemisphere.

1. Glaux maritima L. Sea Milkwort. Black Saltwort. (Fig. 2823.)

Glaux maritima L. Sp. Pl. 207. 1753.

Perennial by slender rootstocks, glabrous, pale or glaucous, simple or branched, erect or diffuse, 2′–8′ high. Leaves oval, oblong or linear-oblong, rarely somewhat spatulate, sessile, 2″–6″ long, 1″–2½″ wide, the lower usually smaller than the upper; flowers about 1½″ broad, solitary and very nearly sessile in the axils, usually numerous; calyx-lobes oval, pink, purplish or white; stamens either shorter than the style or exceeding it; capsule nearly enclosed by the calyx, but free from and about equalling it.



In salt marshes and on sea-beaches, New Jersey to Newfoundland; in saline or subsaline soil from Minnesota and Manitoba to the Northwest Territory, south to Nebraska and Nevada; on the Pacific Coast from California to Alaska. Also in Europe and Asia. Called also Sea Trifoly. June–Aug.

10. ANAGÁLLIS L. Sp. Pl. 148. 1753.

Annual or perennial, diffuse or erect, branching mostly glabrous herbs, with opposite or verticillate (rarely alternate) sessile or short-petioled leaves, entire or nearly so, and small axillary peduncled red blue white or pink flowers. Calyx 5-parted, the lobes lanceolate or subulate, spreading, persistent. Corolla deeply 5-parted, rotate, the segments entire or erose, convolute in the bud, longer than the calyx. Stamens 5, inserted at the base of the corolla, filaments subulate, or filiform, puberulent, or pubescent, distinct, or united into a narrow ring at the base; anthers oblong, obtuse. Ovary globose, ovules numerous; stigma obtuse. Capsule globose, circumscissile, many-seeded. Seeds minute, flat on the back. [Greek, delightful.]

About 15 species, mostly of the Old World, 1 native in southern South America. The following European and Asiatic species is widely distributed as a weed.

1. Anagallis arvénsis L. Red or Scarlet Pimpernel. Poor Man's or Shepherd's Weather-glass. (Fig. 2824.)

Anagallis arvensis L. Sp. Pl. 148. 1753.

Annual, diffuse, usually much branched; branches 4′–12′ long, 4-sided. Leaves ovate or oval, membranous, opposite or rarely in 3's, sessile or somewhat clasping, obtuse or acutish, 3″–10″ long, black-dotted beneath; peduncles filiform, ½′–1½′ long, recurved in fruit; calyx-lobes keeled, rather rigid, slightly shorter than the crenate glandular-ciliate corolla-segments; flowers scarlet, sometimes white, usually with a darker center, 2″–3″ broad, opening only in bright weather; capsule glabrous, about 2″ in diameter.

In waste places, Newfoundland to Florida, west to Minnesota, Texas and Mexico, and on the Pacific Coast. Naturalized from Europe. Called also Red Chickweed, Burnet Rose, and Shepherd's Clock. May–Aug.

Anagallis arvénsis coerùlea (Lam.) Ledeb. Fl. Ross. 3: 30. 1846.

Anagallis coerulea Lam. Fl. Fr. 2: 285. 1778.

Flowers blue; corolla-segments glabrous. Reported as sparingly occurring in waste places. Probably a distinct species.

11. CENTÚNCULUS L. Sp. Pl. 116. 1753.

Low annual glabrous erect simple or branched herbs, with alternate small entire sessile or short-petioled leaves, or the lower opposite, and minute solitary axillary flowers. Calyx 4–5-parted, persistent, the lobes longer than the corolla. Corolla 4–5-cleft, marcescent, the tube subglobose, the lobes entire, acute, spreading. Stamens 4–5, inserted on the throat of the corolla; filaments short, distinct; anthers ovate or cordate, obtuse; stigma capitate. Ovules numerous, amphitropous. Capsule globose, circumscissile, many-seeded. Seeds minute, flat on the back. [Latin, diminutive of *cento*, a patch.]

Three species, of wide geographic distribution. In addition to the following, another occurs in Florida.

1. Centunculus minimus L. Chaffweed. False Pimpernel. (Fig. 2825.)

Centunculus minimus L. Sp. Pl. 116. 1753.

Simple or branched, very slender, 1′–6′ high. Leaves spatulate, obovate or oblong, short-petioled, obtuse or acutish, 2″–4″ long, 1″–2″ wide; flowers sessile or very nearly so in the axils, shorter than the leaves, mostly 4-parted, 1″–2″ broad; calyx-lobes linear or linear-lanceolate, acuminate; corolla pink; capsule shorter than the calyx.

In moist soil, Illinois and Minnesota to British Columbia, south to Florida, Texas and Mexico. Also in Europe and South America. April–Sept.

12. DODECÀTHEON L. Sp. Pl. 144. 1753.

Glabrous scapose perennial herbs, with entire or repand basal leaves. Flowers large or middle-sized in involucrate umbels terminating scapes. Calyx deeply 5-lobed, persistent, the lobes at first reflexed. Corolla 5-parted, the lobes reflexed, slightly unequal, imbricated, the tube very short, thickened at the throat. Stamens 5, inserted on the throat of the corolla; filaments short, flat, monadelphous, connivent into a cone, exserted; anthers linear or lanceolate, connivent, attached by their bases to the filaments. Ovary ovoid or subglobose, superior; ovules numerous, amphitropous; style filiform, exserted; stigma simple. Capsule oblong or cylindric, erect, 5–6-valved at the apex or splitting to the base. Seeds numerous, minute; the testa punctate. [Greek, twelve gods; name used by Theophrastus for some different plant.]

About 10 species, natives of North America and northeastern Asia. Besides the following, some 8 others occur in western and northwestern North America.

1. Dodecatheon Mèadia L. Shooting Star. American Cowslip. Pride-of-Ohio. (Fig. 2826.)

Dodecatheon Meadia L. Sp. Pl. 144. 1753.

Perennial by a stout rootstock; roots fibrous; scape erect, 8′–2° high. Leaves oblong or oblanceolate, obtuse or obtusish at the apex, narrowed into margined petioles, entire or toothed, 3′–12′ long, ½′–4′ wide; flowers few, several or numerous in the umbels, 9″–15″ long; bracts of the involucre lanceolate or linear, acute; pedicels recurved in flower, erect in fruit, unequal, the outer ones sometimes 4′ long; calyx-lobes triangular-lanceolate, acute; corolla purple, pink or white; anthers 3″–4″ long; capsule narrowly ovoid, erect, 5-valved above, 6″–8″ high.

On moist cliffs and prairies, Pennsylvania to Manitoba, south to Georgia and Texas. April–May.

Dodecatheon Mèadia Frénchii Vasey; Wats. & Coult. in A. Gray, Man. Ed. 6, 735 b. 1891.

Leaves ovate or elliptic, base abruptly contracted or cordate. Illinois to Arkansas; southern Pennsylvania?

Family 8. **PLUMBAGINÀCEAE** Lindl. Nat. Syst. Ed. 2, 269. 1836.

Plumbago Family.

Perennial mostly acaulescent erect herbs, with basal tufted leaves (stem climbing and leafy in *Plumbago*), and small perfect and regular clustered flowers. Calyx inferior, gamosepalous, tubular or funnelform, 5-toothed, plaited at the sinuses, the tube 5–15-ribbed. Corolla of 5 hypogynous clawed segments, connate at the base or united into a tube, convolute or imbricated in the bud. Stamens 5, opposite the corolla-segments, hypogynous; filaments separate, or united at the base; anthers 2-celled, attached by their backs to the filaments, the sacs longitudinally dehiscent. Disk none. Ovary superior, 1-celled; ovule solitary, anatropous, pendulous, the funiculus arising from the base of the cavity; styles 5, separate or united. Fruit a utricle or achene, enclosed by the calyx, rarely a dehiscent capsule. Seed solitary; testa membranous; endosperm mealy, or none; embryo straight; cotyledons entire.

About 10 genera and 350 species, of wide geographic distribution, mostly in saline situations.

Inflorescence cymose-paniculate; flowers in one-sided spikes. 1. *Limonium.*
Flowers in a dense terminal head. 2. *Statice.*

† 1. **LIMÒNIUM** Adans. Fam. Pl. **2**: 283. 1763.

[Statice Willd. Sp. Pl. 1: 1552. 1798.]

Herbs, mostly with flat basal leaves, and numerous very small flowers cymose-paniculate on the branches of bracted scapes, in 1–3-flowered bracteolate clusters, forming one-sided spikes. Calyx campanulate or tubular, the limb scarious, 5-toothed, the tube usually 10-ribbed. Petals 5, clawed. Stamens adnate to the bases of the petals. Styles 5, separate in our species, stigmatic along the inner side. Fruit a utricle. [Ancient name of the wild beet.]

About 120 species. Besides the following, 1 occurs on the South Atlantic and 1 on the Pacific Coast.

1. Limonium Carolinìanum (Walt.) Britton. Sea Lavender. Marsh Rosemary. Canker-root. (Fig. 2827.)

Statice Caroliniana Walt. Fl. Car. 118. 1788.
Statice Limonium var. *Carolinianum* A. Gray, Man. Ed. 2, 270. 1856.
L. Carolinianum Britton, Mem. Torr. Club, 5: 255. 1894.

Glabrous, fleshy, rootstock thick, fusiform or branched, scape terete, striate, slender, paniculately branched above, 1°–2° high. Leaves oblanceolate, obtuse or acutish and mucronulate at the apex, narrowed into margined petioles, entire, or slightly undulate, 3′–10′ long, ½′–1½′ wide, shorter than the scapes, the midvein prominent, the lateral veins very obscure; flowers erect, usually solitary in the sessile secund bracteolate clusters, about 2″ high; calyx 5-toothed, sometimes with as many minute intermediate teeth in the sinuses; corolla pale purple; petals spatulate; ovary oblong or ovoid; styles filiform.

On salt meadows, Labrador to Florida and Texas. Called also Lavender-thrift, and Ink-root. July–Oct.

2. STÁTICE L. Sp. Pl. 274. 1753.

[ARMERIA Willd. Enum. 333. 1809.]

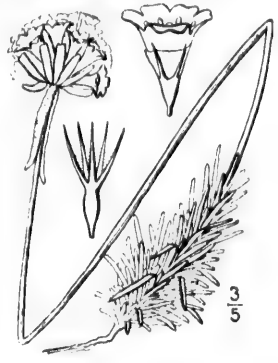
Tufted acaulescent fleshy herbs, with slender mostly naked scapes, basal persistent rosulate narrow leaves with no differentiation into blade and petiole, and rather small short-pedicelled or sessile flowers, in dense terminal glomerate heads, subtended by scarious bracts and bractlets, the lower bracts forming a kind of involucre to the head, the two lowest reflexed and more or less united into a sheath. Calyx funnelform, 10-ribbed, 5-toothed, oblique at the base or decurrent on the pedicel, scarious. Petals 5, distinct, or more or less coherent. Filaments adnate to the bases of the petals. Styles united at the base, pubescent below the middle, longitudinally stigmatic above. Utricle 5-pointed at the summit, rarely dehiscent. [Greek, standing.]

About 20 species, natives of Europe, north Africa, western Asia, northern North America and southern South America. The following is the only one known in North America.

1. Statice Armèria L. Thrift. Sea Pink. Ladies' Cushion. (Fig. 2828.)

Statice Armeria L. Sp. Pl. 274. 1753.
Armeria vulgaris Willd. Enum. 333. 1809.

Scape glabrous or somewhat pubescent, 4′–18′ high. Leaves narrowly linear, acute or obtuse, flattish, obscurely 1-nerved, entire, numerous in a radial tuft, 1′–3′ long, ½″–1½″ wide; bracts scarious and obtuse, the 2 lower ones forming a sheath ⅜″–10″ long; head of flowers ½′–1′ in diameter; calyx-base decurrent on the very short pedicel, pubescent at least on the stronger nerves; corolla pink, purple or white, 2″–3″ broad; petals obtuse or cuspidate.



Along the sea-coast and on mountains, Labrador to Alaska, south on the Pacific Coast to California. Also in Europe, northern Asia, and apparently the same species at the Strait of Magellan. Summer. Called also Sea-thrift, Sea-gilliflower, Sea-grass, Red-root.

Family 9. SAPOTÀCEAE Reichenb. Consp. 135. 1828.

SAPODILLA FAMILY.

Shrubs or trees, mostly with a milky juice. Leaves alternate, simple, entire, pinnately-veined, mostly coriaceous and exstipulate. Flowers small, regular and perfect, in axillary clusters. Calyx inferior, polysepalous, the sepals usually 4–7, much imbricated. Corolla gamopetalous, the tube campanulate or urceolate, 4–7-lobed, the lobes imbricated in the bud, sometimes with as many or twice as many lobe-like appendages borne on the throat. Stamens as many as the proper lobes of the corolla and inserted on its tube; staminodia usually present, alternate with the corolla-lobes; filaments mostly short, subulate; anthers attached by their bases to the filaments, or versatile, 2-celled, the sacs longitudinally dehiscent. Ovary superior, 2–5-celled, or rarely many-celled; ovules solitary in each cavity, anatropous or amphitropous; style conic or subulate; stigma simple. Fruit a fleshy berry, commonly 1-celled and 1-seeded, sometimes several-seeded. Seed large, the testa bony or crustaceous; embryo straight; endosperm fleshy, or none.

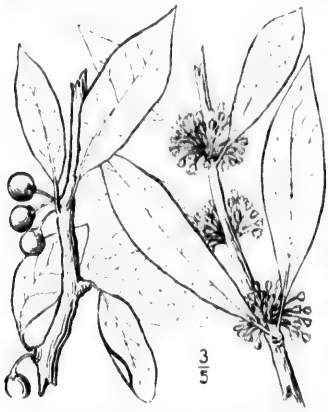
About 35 genera and 400 species, mostly of tropical regions in both the Old World and the New. Besides the following, 4 other genera occur in south Florida.

1. BUMÈLIA Sw. Prodr. 49. 1788.

Shrubs or trees, often spiny, with very hard wood, alternate coriaceous or membranous leaves, sometimes clustered at the nodes, and small pedicelled white flowers, fascicled in the axils. Calyx very deeply 5-parted, the segments much imbricated, unequal. Corolla 5-lobed, with a pair of lobe-like appendages at each sinus, its tube short. Stamens 5, inserted near the base of the corolla-tube; filaments filiform; anthers sagittate. Staminodia 5, petaloid, alternate with the stamens. Ovary 5-celled; style filiform. Berry globose or ellipsoid, small, the pericarp fleshy; enclosing a single erect seed. Seed shining, the hilum at the base. [Greek, ox [large] ash.]

About 30 species, natives of America. Besides the following, some 10 others occur in the southern and southwestern United States.

Foliage, pedicels and calyx glabrous or very nearly so. 1. *B. lycioides.*
Foliage, pedicels and calyx tomentose-pubescent. 2. *B. lanuginosa.*



1. Bumelia lycioides (L.) Pers. Southern Buckthorn. (Fig. 2829.)

Sideroxylon lycioides L. Sp. Pl. Ed. 2, 279. 1762.
Bumelia lycioides Pers. Syn. 1: 237. 1805.

A shrub or small tree with maximum height of about 40° and trunk diameter of about 6′, the bark gray, the twigs commonly spiny. Leaves rather firm, tardily deciduous, glabrous on both sides; finely reticulate-veined, oblong, elliptic, or oblanceolate, acute or acuminate at both ends, rarely obtuse at the apex, 2′–5′ long, ¼′–1½′ wide; petioles 2″–6″ long; flowers about 1¼″ broad, numerous in the dense axillary clusters; pedicels about the length of the petioles, glabrous; calyx-segments obtuse, glabrous; staminodia ovate, boat-shaped, entire; berry subglobose, black, 4″–5″ long.

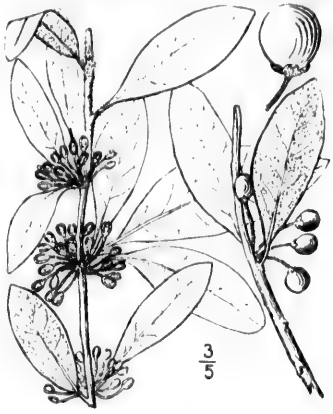
In moist thickets, Virginia to Illinois and Missouri, south to Florida and Texas. Wood hard, yellowish-brown; weight about 46 lbs. per cubic foot. June–Aug.

2. Bumelia lanuginòsa (Michx.) Pers. Woolly Buckthorn. (Fig. 2830.)

Sideroxylon lanuginosum Michx. Fl. Bor. Am. 1: 122. 1803.
Bumelia lanuginosa Pers. Syn. 1: 237. 1805

A shrub or tree, sometimes reaching a height of 60° and a trunk diameter of 3°, the twigs usually spiny. Leaves persistent, rather coriaceous, glabrous above, densely tomentose-pubescent beneath, oblanceolate, obovate or oblong, usually obtuse at the apex, narrowed or cuneate at the base, 1½′–3′ long, ¼′–1′ wide; petioles 2″–6″ long; flowers 3–18 in the fascicles, about 1¼″ broad; pedicels tomentose, longer than the petioles; calyx-segments ovate, tomentose, obtusish; staminodia ovate, obscurely toothed; berry oval, black, 4″–5″ long.

In woods and thickets, Illinois to Texas, Georgia and Florida. Wood soft, weak, yellowish-brown; weight per cubic foot 41 lbs. Shittim-wood. June–July.



Family 10. **EBENÀCEAE** Vent. Tabl. 2: 443. 1779.

Ebony Family.

Trees or shrubs with very hard wood, alternate entire exstipulate leaves, and dioecious polygamous or rarely perfect regular flowers, solitary or cymose in the axils. Calyx inferior, 3–7-lobed, commonly accrescent and persistent. Corolla gamopetalous, deciduous, 3–7-lobed, the lobes usually convolute in the bud. Stamens 2–3 times as many as the lobes of the corolla in the sterile flowers, and inserted on its tube, usually some imperfect ones in the pistillate flowers; filaments short; anthers introrse, narrow, erect. Disk none. Ovary superior, several-celled, in the staminate flowers rudimentary or none; ovules 1–3 in each cavity, suspended; styles 2–8, distinct, or united below; stigmas terminal, sometimes 2-parted. Fruit a berry, containing several seeds, or but one. Seeds oblong, compressed or globose, the testa bony, endosperm copious, cartilaginous; embryo small, usually straight; cotyledons large, foliaceous.

About 6 genera and 275 species, mostly of tropical distribution.

1. DIOSPÝROS L. Sp. Pl. 1057. 1753.

Trees or shrubs, with broad leaves and lateral cymose racemose or solitary flowers, the pistillate commonly solitary, the staminate usually clustered. Calyx 4–6-cleft, enlarging in fruit. Corolla urceolate in our species, 4–6-lobed. Stamens 8–20 in the sterile flowers, few or none in the pistillate ones. Styles 2–6 in the pistillate flowers; ovary globose or ovoid, its cavities twice as many as the styles. Ovary rudimentary in the sterile flowers. Berry large, pulpy, containing 4–12 flat oblong hard seeds. [Greek, Zeus' wheat.]

About 160 species, abundant in Asia. Besides the following, another occurs in the southwest.

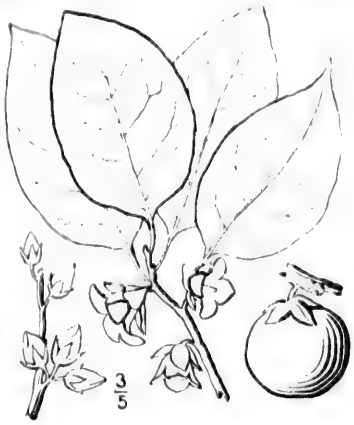
1. Diospyros Virginiàna L.

Persimmon. Date-Plum. (Fig. 2831.)

Diospyros Virginiana L. Sp. Pl. 1057. 1753.

A tree with maximum height of about 100° and trunk diameter of 2°, usually much smaller; bark hard, dark, furrowed. Leaves ovate or oval, deciduous, pubescent when young, becoming glabrous, acute or acuminate, narrowed, rounded or subcordate at the base, dark green above, pale beneath, 2′–5′ long; petioles 3″–10″ long, loosely jointed with the twigs, the leaves falling away in drying; flowers mostly 4-parted; corolla greenish yellow; stamens of the sterile flowers about 16, those of the pistillate 8 or fewer; fruit globose, about 1′ long, reddish yellow and sweet when ripe, astringent when green, ripening after frost in the northern states.

In fields and woods, Rhode Island and southern New York to Kansas, Florida and Texas. Wood hard, strong, dark brown; weight per cubic foot 49 lbs. May–June. Fruit ripe Sept.–Nov.



Family 11. SYMPLOCÀCEAE Miers; Lindl. Veg. Kingd. Ed. 3, 593. 1853.

SWEET-LEAF FAMILY.

Trees or shrubs, with entire or dentate broad leaves, and small or middle-sized regular mostly yellow and perfect flowers, in lateral or axillary clusters. Calyx-tube completely or partly adnate to the ovary, its limb 5-lobed, the lobes imbricated in the bud. Corolla 5-parted, sometimes very nearly to the base, the segments imbricated. Disk none. Stamens numerous in several series, inserted on the base or tube of the corolla; filaments filiform, usually slightly united in clusters at the base of each corolla-segment; anthers innate, laterally dehiscent. Ovary 2–5-celled, inferior or partly superior; ovules commonly 2 in each cavity, pendulous; style and stigma one. Fruit a small mostly nearly dry drupe, usually with 1 oblong seed; embryo straight; endosperm fleshy.

Only the following genus, comprising about 175 species, natives of America, Asia and Australasia, most abundant in South America. The following is the only known North American species.

1. SÝMPLOCOS L. Sp. Pl. Ed. 2, 747. 1763.

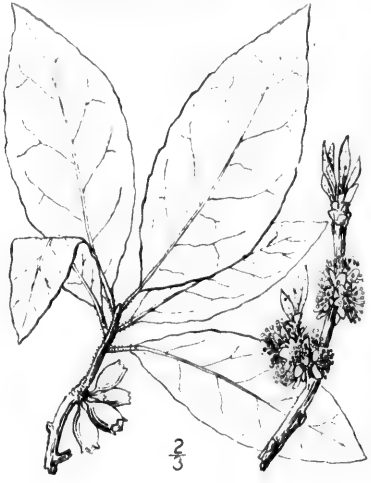
Characters of the family. [Greek, connected, referring to the stamens.]

1. Symplocos tinctòria (L.) L'Her. Sweet-leaf. Horse-sugar. (Fig. 2832.)

Hopea tinctoria L. Mant. 105. 1767.
S. tinctoria L'Her. Trans. Linn. Soc. 1: 176. 1791.

A shrub or small tree, sometimes attaining a height of 35° and a trunk diameter of 9′. Leaves rather coriaceous, oblong or slightly obovate, acute or acuminate at both ends, crenate-serrate with low teeth or repand, short-petioled, puberulent or pubescent on both sides when young, glabrous or nearly so above and dark green when old, pale and persistently pubescent beneath, 3′–6′ long, 1′–3′ wide, deciduous at the northern range of the species, persistent at the south, turning yellowish-green in drying; flowers bright yellow, fragrant, 4″–6″ broad, in sessile scaly-bracted clusters, appearing at the North before the leaves; corolla almost polypetalous, its segments oblong, obtuse, each bearing a cluster of stamens; drupe dry, nut-like, oblong, 3″–6″ long, pubescent, crowned with the small calyx lobes.

Woods and thickets, Delaware to Florida and Louisiana. Wood soft, weak, pale red or white; weight per cubic foot 33 lbs. March–April.



Family 12. **STYRACÀCEAE** A. DC. Prodr. 8: 244. 1844.

Storax Family.

Trees or shrubs, with alternate exstipulate leaves. Flowers regular, perfect, or rarely polygamo-dioecious, clustered, sometimes appearing before the leaves. Pubescence mostly stellate. Calyx more or less adnate to the ovary, 4–8-toothed, or entire. Corolla gamopetalous or polypetalous, the lobes or petals 4–8. Stamens twice as many as the lobes of the corolla or petals, or more, inserted on its tube or base, arranged in 1 series, the filaments monadelphous or 4–5-adelphous; anthers mostly introrse. Disk none. Ovary partly superior, 2–5-celled; ovules solitary or few in each cavity, anatropous; style slender; stigma simple or 2–5-lobed. Fruit a berry or drupe, or often nearly dry, winged in some genera, 1-seeded, or 2–5-celled with a seed in each cavity. Endosperm copious, fleshy; embryo usually straight; cotyledons flat.

About 7 genera and 75 species, mostly tropical, most abundant in South America.

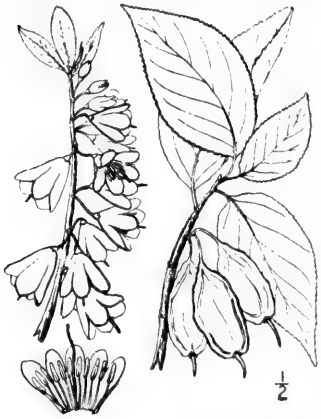
Calyx superior, its tube obconic; fruit 2-4-winged. 1. *Mohrodendron.*
Calyx nearly inferior, its tube campanulate; fruit globose or oblong. 2. *Styrax.*

1. **MOHRODÉNDRON** Britton, Gard. & For. 6: 463. 1893.

[Halesia Ellis; L. Syst. Ed. 10, 2: 1044. 1759. Not. P. Br. 1756.]

Small trees or shrubs, more or less stellate-pubescent, with membranous deciduous denticulate or dentate petioled leaves, and large white slender-pedicelled drooping bell-shaped flowers, in lateral fascicles or short racemes, appearing with or before the leaves. Calyx-tube obconic or obpyramidal, 4–5-ribbed, adnate to the ovary, the limb short, 4-toothed, Corolla campanulate, 4–5-cleft or 4–5-parted nearly to the base. Stamens 8–16; filaments flat, more or less monadelphous, slightly adnate to the corolla; anthers oblong. Ovary 2-4-celled; ovules about 4 in each cavity, the lower ascending, the upper pendulous. Fruit dry, oblong, 2–4-winged longitudinally, 1–4-celled, tipped with the style and the minute calyx-teeth. [In honor of Chas. Mohr, botanist of the Geological Survey of Alabama.]

About 3 species, natives of southeastern North America.



1. Mohrodendron Carolinum (L.) Britton. Silver-bell or Snow-drop Tree. (Fig. 2833.)

Halesia tetraptera L. Sp. Pl. Ed. 2, 636. 1762.
Halesia Carolina L. Syst. Ed. 10, 1044. 1759.
Mohrodendron Carolinum Britton, Gard. & For. 6: 463. 1893.

A small tree with maximum height of about 45° and trunk diameter of about 20′. Leaves oval, ovate or ovate-oblong, denticulate, acuminate at the apex, mostly narrowed at the base, dark green and glabrous above when old, pale green and stellate-pubescent beneath, 2′–6′ long, 1′–3′ wide; flowers in lateral fascicles of 1–5 appearing with the leaves; pedicels filiform, ½′–1½′ long; calyx at flowering time about 2″ long; corolla 6″–9″ long; ovary 4-celled; fruit oblong-ellipsoid, 4-winged, 1′–1½′ long, usually longer than its pedicel, several times longer than the persistent style.

In woods and along streams, Virginia to Illinois, south to Florida and Alabama. Wood soft, light brown; weight per cubic foot 35 lbs. Calico-wood. March April.

2. **STYRAX** L. Sp. Pl. 444. 1753.

Shrubs or small trees, with alternate leaves, deciduous in our species, and rather large mostly white drooping flowers, in lateral or terminal fascicles or leafy racemes, appearing before or with the leaves. Calyx persistent, nearly inferior, its tube campanulate, adnate to the lower part of the ovary, its limb minutely 5-toothed. Corolla 5-parted or 5-divided, the segments or petals imbricate, convolute or valvate in the bud. Stamens twice as many as the corolla lobes or petals (rarely fewer); filaments flat, monadelphous below or rarely separate, inserted on the base of the corolla; anthers linear. Ovary nearly superior, mostly 3-celled at the base; ovules several in each cavity, ascending; stigma 3-toothed, 3-lobed or capitate. Fruit globose or oblong, nearly dry, coriaceous or crustaceous, commonly only 1-seeded, 3-valved at the summit. [Greek name of Storax.]

About 70 species, natives of America, Asia and southern Europe. Besides the following, 2 others occur in the southern and western United States.

Foliage and inflorescence glabrous; calyx glandular-scurfy.
Lower surfaces of the leaves and inflorescence canescent or tomentose.
Leaves oblong or oval, 1′–2½′ long.
Leaves obovate or oval, 2′–6′ long.

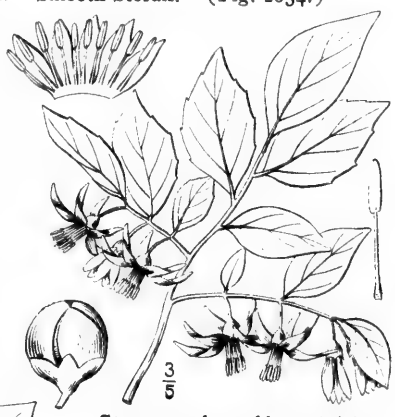
1. *S. Americana.*
2. *S. pulverulenta.*
3. *S. grandifolia.*

1. Styrax Americàna Lam. Smooth Storax. (Fig. 2834.)

Styrax Americana Lam. Encycl. 1: 82. 1783.

A shrub, 4°–10° high, the foliage glabrous or very nearly so throughout. Leaves green on both sides, oblong, oval or obovate, acute or obtuse at the apex, narrowed at the base, entire, or toothed, 1′–3′ long, ½′–1½′ wide; petioles 2″–4″ long, often scurfy when young; flowers few in the mostly short racemes or sometimes solitary, 4″–7″ long, about the length of their pedicels; calyx and pedicels glandular-dotted; petals oblong-lanceolate, acute, puberulent on the outer surface or glabrous, valvate or but slightly overlapping in the bud; fruit subglobose, puberulent, about 3″ in diameter.

In moist thickets and along streams, Virginia to Florida, west to Arkansas and Louisiana. March–April.



2. Styrax pulverulénta Michx. Downy Storax. (Fig. 2835.)

Styrax pulverulenta Michx. Fl. Bor. Am. 2: 41. 1803.

Similar to the preceding species, but the lower surfaces of the leaves, the calyx and pedicels are densely stellate-pubescent or scurfy. Leaves oval or oblong, usually acute at each end and denticulate, short-petioled, 1′–2½′ long, pale beneath; flowers in short terminal racemes and often in pairs in the axils, 4″–7″ long, usually longer than their pedicels; petals oblong-lanceolate, acute, puberulent on both sides or only on the exterior, convolute or imbricated in the bud; fruit globose, puberulent, about 3″ in diameter.

In moist pine-barrens, Virginia to Florida and Texas. March–April.

3. Styrax grandifòlia Ait. Large-leaved Storax. (Fig. 2836.)

Styrax grandifolia Ait. Hort. Kew. 2: 75. 1789.

A shrub, 5°–12° high. Leaves obovate or oval, dentate, denticulate or entire, short-petioled, tomentose or canescent and pale beneath, green and glabrous above, 2′–6′ long, or on young shoots much larger; flowers 5″–8″ long, longer than their pedicels, mostly several in loose sometimes elongated racemes; rachis, pedicels and calyx stellate-tomentose; petals oblong, acutish, imbricated or convolute in the bud, puberulent without and often also within; fruit obovoid, puberulent, about 4″ long.

In woods, Virginia to Florida and Georgia. March–May.

Family 13. **OLEÀCEAE** Lindl. Nat. Syst. 1830.

Olive Family.

Trees or shrubs (a few genera almost herbaceous) with opposite or rarely alternate simple or pinnate exstipulate entire or dentate leaves and regular perfect polygamous or dioecious, 2–4-parted flowers in terminal or axillary panicles, cymes or fascicles. Calyx inferior, free from the ovary, usually small, sometimes none. Corolla gamopetalous, polypetalous, or none. Stamens 2–4, inserted on the corolla; filaments usually short, separate; anthers mostly large, ovate, oblong or linear, 2-celled, the sacs longitudinally dehiscent. Ovary superior, 2-celled; ovules few in each cavity, anatropous or amphitropous; style usually short or none, rarely elongated. Fruit a capsule, samara, berry or drupe. Seeds erect or pendulous; endosperm fleshy, horny or wanting; embryo straight, rather large; cotyledons flat, or plano-convex; radicle usually short.

About 21 genera and 500 species, of wide distribution in temperate and tropical regions.

Fruit a loculicidal capsule; leaves simple; flowers complete. 1. *Syringa.*
Fruit a samara; leaves pinnate; flowers dioecious. 2. *Fraxinus.*
Fruit a drupe or berry; leaves simple.
Flowers dioecious, apetalous, from catkin-like scaly buds. 3. *Adelia.*
Flowers complete, polypetalous, paniculate; petals linear. 4. *Chionanthus.*
Flowers complete, gamopetalous, paniculate. 5. *Ligustrum.*

1. **SYRÍNGA** L. Sp. Pl. 9. 1753.

Shrubs with opposite entire (rarely pinnatifid) leaves, and complete gamopetalous flowers, in dense terminal panicles or thyrses. Calyx campanulate, mostly 4-toothed, persistent. Corolla salverform, the tube cylindric, the limb 4-lobed, the lobes induplicate-valvate. Stamens 2, inserted near the summit of the corolla-tube; filaments short or slender; anthers ovate or oblong. Ovary 2-celled; ovules 2 in each cavity, pendulous; style elongated; stigma 2-cleft. Capsule narrowly oblong, somewhat compressed, coriaceous, loculicidally 2-valved from above, the valves concave. Seeds pendulous, compressed, obliquely winged. [Greek, a pipe, or tube.]

About 12 species, natives of Asia and eastern Europe.

1. Syringa vulgàris L. Lilac. (Fig. 2837.)

Syringa vulgaris L. Sp. Pl. 9. 1753.

A glabrous shrub, 10°–25° high with terete branches. Leaves ovate, entire, deciduous, green on both sides, acuminate at the apex, truncate or subcordate at the base, 2′–5′ long, 1′–3′ wide; petioles ½′–1′ long; flowers lilac or white, very numerous, 5″–7″ long, 4″–5″ broad, in large terminal thyrses; calyx about 1″ long; corolla-tube about 1″ in diameter; ultimate pedicels short; capsule 8″–12″ long, 2″ thick.

Escaped from gardens to roadsides in New Jersey, southeastern New York, and Pennsylvania. Native of eastern Europe. Old names, Pipe-tree, Pipe-privets, Blue-pipe, Blue-ash, Roman Willow. Flowers fragrant. April–May.

2. **FRÁXINUS** L. Sp. Pl. 1057. 1753.

Trees, with opposite and in all our species odd-pinnate leaves, and small dioecious or polygamous (rarely perfect) greenish fasciculate or racemose-fasciculate flowers, appearing before or with the leaves from the axils of those of the previous season. Calyx small, 4-cleft, irregularly toothed, entire or none. Petals none or 2–4, separate, or united in pairs at the base, induplicate-valvate. Stamens 2 (rarely 3 or 4), inserted on the base of the petals or hypogynous; filaments short or elongated; anthers ovate, oblong or linear. Ovules 2 in each cavity of the ovary, pendulous; stigma 2-cleft. Fruit a flat samara, winged at the apex only or all around, usually 1-seeded. Seed oblong, pendulous. [The ancient Latin name.]

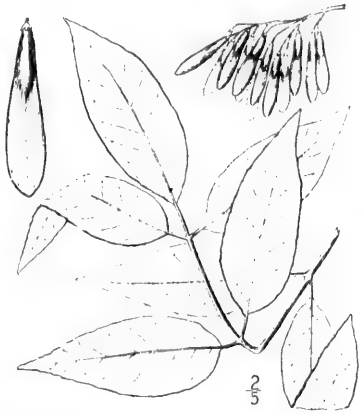
About 40 species. Besides the following, 6 others occur in the southern and western states.

Lateral leaflets stalked; calyx present in the fertile flowers.
Body of the samara terete or nearly so, the wing chiefly terminal.
Wing almost entirely terminal; leaves pale beneath. 1. *F. Americana.*
Wing manifestly extending down on the sides of the body.
Foliage, twigs and pedicels glabrous or very nearly so. 2. *F. lanceolata.*
Foliage, young twigs and pedicels velvety-pubescent. 3. *F. Pennsylvanica.*
Body of the samara flat, the wing extending all around it.
Twigs terete; leaflets 5–7; samara elliptic or spatulate. 4. *F. Caroliniana.*
Twigs 4-sided; leaflets 7–11; samara oblong or cuneate. 5. *F. quadrangulata.*
Lateral leaflets sessile; calyx none; samara winged all around. 6. *F. nigra.*

1. Fraxinus Americàna L. White Ash. (Fig. 2838.)

Fraxinus Americana L. Sp. Pl. 1057. 1753.

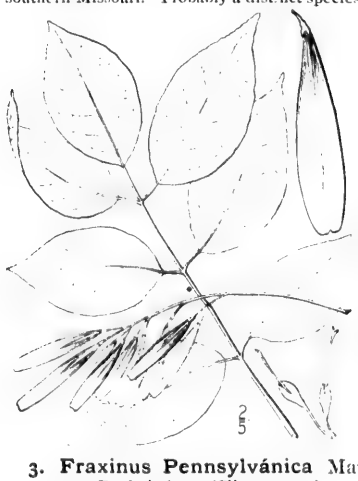
A large forest tree, reaching a maximum height of about 130° and a trunk diameter of 6°. Twigs, petioles and rachis of the leaves glabrous; leaflets 5–9 (commonly 7), ovate, ovate-lanceolate, oblong or rarely slightly obovate, stalked, entire or denticulate, dark green above, pale or light green and often pubescent beneath, 3′–5′ long, 1′–2′ wide, acuminate or acute at the apex, mostly rounded at the base; flowers dioecious (rarely monoecious), the calyx of the pistillate present and persistent; anthers linear-oblong; samara 1′–2′ long, its body terete, not margined, winged only from near the summit, one-fourth to one-half the length of the linear-oblong or lanceolate wing.



In rich woods, Nova Scotia to Minnesota, south to Florida, Kansas and Texas. Wood heavy, hard, strong, brown; weight per cubic foot 41 lbs. April-June.

Fraxinus Americàna profúnda Bush, Ann. Rep. Mo. Bot. Gard. **5**: 147. 1894.

Leaflets densely pubescent beneath; samara 2′–2½′ long, the wing more decurrent. Swamps, southern Missouri. Probably a distinct species.



2. Fraxinus lanceolàta Borck. Green Ash. (Fig. 2839.)

Fraxinus lanceolata Borck. Handb. Forst. Bot. **1**: 826. 1800.

Fraxinus viridis Michx. f. Hist. Arb. Am. **3**: 115. *pl. 10.* 1813.

A tree with maximum height of about 65° and trunk diameter of 3°, glabrous or very nearly so throughout. Leaflets 5–9, stalked, entire or denticulate, ovate or oblong-lanceolate, acuminate or acute at the apex, mostly narrowed at the base, green on both sides, 2′–6′ long, 1′–2′ wide; flowers dioecious, the calyx of the pistillate persistent; anthers linear-oblong; samara 1′–2′ long, very similar to that of the preceding species, the usually spatulate and proportionately slightly longer wing sometimes decurrent on the sides of the body to below the middle.

Moist soil, Vermont to the Northwest Territory, Florida, Utah and Arizona. Wood hard, strong, brown; weight per cubic foot 44 lbs. April-May.

3. Fraxinus Pennsylvánica Marsh. Red Ash. (Fig. 2840.)

Fraxinus Pennsylvanica Marsh. Arb. Am. 51. 1785.
Fraxinus pubescens Lam. Encycl. **2**: 518. 1786.

A tree with maximum height of about 80° and trunk diameter of 4°. Twigs, petioles, rachis petiolules and lower surfaces of the leaves velvety-pubescent; leaflets 5–9, stalked, ovate, ovate-lanceolate or oblong, acuminate or acute at the apex, mostly narrowed at the base, usually denticulate, 3′–6′ long, 1′–2′ wide; flowers dioecious, the calyx of the pistillate ones present and persistent; anthers linear-oblong; samara 1′–2½′ long, its body linear, margined above by the decurrent linear or spatulate wing, and about equalling it.

In moist soil, New Brunswick to South Dakota, Florida, Alabama, and Missouri. Wood heavy, strong, brown; weight per cubic foot 39 lbs. April-May.

4. Fraxinus Caroliniàna Mill. Water Ash. (Fig. 2841.)

F. Caroliniana Mill. Dict. Ed. 8, no. 6. 1768.
F. platycarpa Michx. Fl. Bor. Am. 2: 256. 1803.

A small tree, rarely over 40° high, the trunk reaching about 1° in diameter, with terete twigs and glabrous or slightly pubescent foliage. Leaflets 5–7 (rarely 9), ovate, ovate-lanceolate or oblong, acuminate or acute at the apex, narrowed, or the lower ones rounded at the base, long-stalked (4″–8″), sharply serrate, serrulate or sometimes entire, 2′–5′ long, ½′–1½′ wide; flowers dioecious, the calyx of the pistillate persistent; anthers linear-oblong; samara 1′–2′ long, 4″–9″ wide, elliptic or spatulate, the body linear, flat, broadly winged all around, extending more than half way to the apex of the fruit, the wing pinnately veined; samaras sometimes 3-angled.

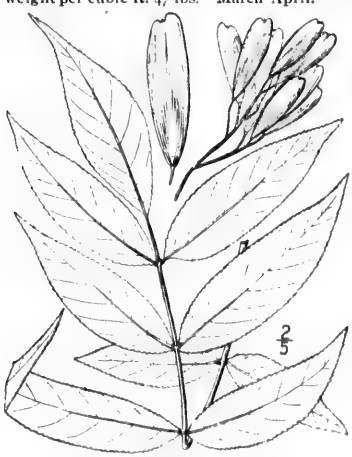
In swamps and wet soil, southeastern Virginia to Florida, west to Arkansas and Texas. Also in Cuba. Wood light, soft, weak, yellowish white; weight per cubic foot 22 lbs. March–April.

5. Fraxinus quadrangulàta Michx. Blue Ash. (Fig. 2842.)

Fraxinus quadrangulata Michx. Fl. Bor. Am. 2: 255. 1803.

A large forest tree, sometimes becoming 110° high, the trunk reaching 3° in diameter, the twigs 4-sided, the foliage glabrous, or sparingly pubescent when young. Leaflets 7–11, ovate, oblong or lanceolate, acuminate at the apex, rounded or narrowed at the base, short-stalked (2″–3″), green on both sides, sharply serrate or serrulate, 3′–5′ long, 1′–2′ wide; flowers dioecious, the calyx of the pistillate ones deciduous or sometimes obsolete; anthers linear-oblong; samara linear-oblong or cuneate, 1′–2′ long, 3″–7″ wide, winged all around, parallel-nerved, the body extending more than half-way to the apex.

In woods, Ontario, Minnesota and Michigan to Alabama, west to Iowa and Arkansas. Wood heavy, hard, not strong, yellowish brown; weight per cubic ft. 47 lbs. March–April.



6. Fraxinus nigra Marsh. Black Ash. Hoop Ash. (Fig. 2843.)

Fraxinus nigra Marsh. Arb. Am. 51. 1785.
Fraxinus sambucifolia Lam. Encycl. 2: 549. 1786.

A swamp tree, reaching a maximum height of about 100° and trunk diameter of 3°, the twigs terete, the foliage glabrous, except the midrib of the lower surfaces of the leaflets. Leaflets 7–11, sessile, green on both sides, oblong-lanceolate, long-acuminate at the apex, narrowed or rounded at the base, sharply serrate or serrulate, 3′–6′ long, 9″–18″ wide; flowers dioecious; calyx none; anthers short-oblong; samara oblong or linear-oblong, parallel-nerved, 1′–1¼′ long, 3″–4″ wide, the body flat, winged all around, extending to or beyond the middle.

In swamps and wet woods, Newfoundland to Manitoba, south to Virginia and Arkansas. Wood heavy, soft, not strong, dark brown; weight per cubic foot 39 lbs. Lateral leaflets sessile. April–May. Called also Water-ash.

3. ADÈLIA P. Br. Civ. & Nat. Hist. Jam. 361. 1756.

[FORESTIERA Poir. in Lam. Encycl. Suppl. 2: 664. 1811.]

Shrubs with opposite simple serrulate or entire deciduous or persistent leaves (punctate in some southern species), and small yellow or greenish dioecious or polygamous flowers, fascicled, short-racemose or paniculate from scaly buds produced at the axils of the preceding season, appearing before or with the leaves. Calyx wanting, obsolete, or minute and 4-toothed or 4-parted. Corolla wanting, or of 1 or 2 small deciduous petals. Stamens 2–4; anthers ovate or oblong. Ovary ovoid, 2-celled; ovules 2 in each cell, pendulous; style slender; stigma 2-lobed. Fruit an oblong or subglobose drupe with 1 or rarely 2 seeds. [Greek, inconspicuous, perhaps referring to the flowers.]

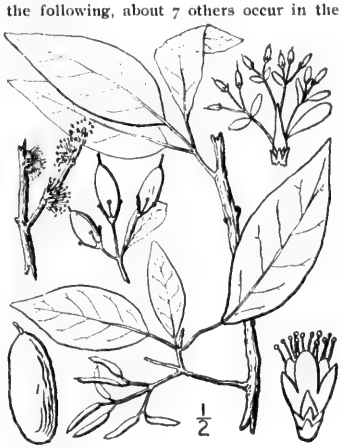
About 15 species, natives of America. Besides the following, about 7 others occur in the southern and southwestern United States.

1. Adelia acuminàta Michx. Adelia. (Fig. 2844.)

Adelia acuminata Michx. Fl. Bor. Am. 2: 225. *pl. 48.* 1803.
Forestiera acuminata Poir. in Lam. Encycl. Suppl. 2: 664. 1811.

A shrub or small tree, sometimes reaching a height of 30° and a trunk diameter of 8′, the branches somewhat spiny, the foliage glabrous. Leaves ovate, lanceolate or oblong, acuminate or acute at both ends, finely denticulate, 1′–4′ long, ½′–2′ wide; petioles slender, 4″–12″ long; staminate flowers fascicled; pistillate flowers short-paniculate; calyx obsolete; drupe narrowly oblong when mature, about ½′ long, when young fusiform and often curved.

River-banks, Illinois to Georgia, west to Missouri, Arkansas and Texas. Wood heavy, soft, not strong, yellowish brown; weight per cubic foot 40 lbs. March–April.



4. CHIONÁNTHUS L. Sp. Pl. 8. 1753.

Shrubs or small trees, with opposite simple entire leaves, and complete conspicuous white flowers, in large loose panicles from the axils of the upper leaves of the preceding season. Calyx small, 4-cleft or 4-parted, inferior, persistent. Corolla of 4 linear petals, slightly united at the very base, their margins slightly induplicate in the bud. Stamens 2 (rarely 3), inserted on the base of the corolla; filaments very short. Ovules 2 in each cavity of the ovary, pendulous; style short; stigma thick, emarginate or slightly 2-lobed. Fruit an oblong or ovoid usually 1-seeded drupe. [Greek, snow-blossom.]

About 3 species, the following of southeastern North America, the others Chinese.

1. Chionanthus Virgínica L. Fringe-tree. (Fig. 2845.)

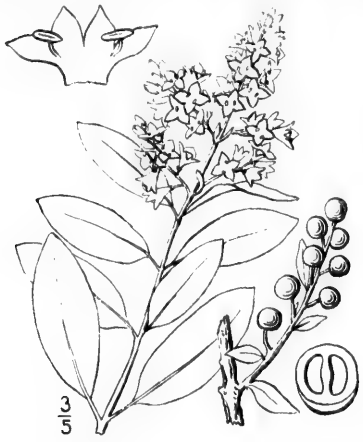
Chionanthus Virginica L. Sp. Pl. 8. 1753.

A shrub, or small tree, reaching a maximum height of about 35° and trunk diameter of about 8′, the young twigs, petioles and lower surfaces of the leaves pubescent, or sometimes glabrate. Leaves oval, oblong or some of them obovate, rather thick, acute, short-acuminate to obtuse at the apex, narrowed at the base, 3′–6′ long, 1′–3′ wide; the blade more or less decurrent on the petiole; panicles drooping, sometimes 10′ long, usually with some sessile oblong leaflike bracts, its branches and the pedicels very slender; petals 1′ long or more, 1″ wide or less; drupe oblong or globose-oblong, nearly black, 5″–8″ long, the pulp thin.

In moist thickets, Delaware and southern Pennsylvania to Florida and Texas. Ascends to 2500 ft. in North Carolina. Wood heavy, hard, light brown; weight per cubic foot 40 lbs. Called also Old-man's Beard. May–June.

5. LIGÚSTRUM L. Sp. Pl. 7. 1753.

Shrubs or small trees, with opposite entire simple leaves, and small white complete flowers in terminal thyrses or panicles. Calyx small, truncate or 4-toothed, inferior. Corolla gamopetalous, funnelform, its tube mostly short, the limb 4-lobed, the lobes induplicate-valvate in the bud. Stamens 2, inserted on the tube of the corolla; filaments short. Ovary 2-celled; ovules 2 in each cavity, pendulous; style short or slender; stigma thickened. Fruit a 1–3-seeded mostly globose berry. [The classical Latin name.]



About 35 species, natives of the Old World.

1. Ligustrum vulgàre L. Privet. Prim. (Fig. 2846.)

Ligustrum vulgare L. Sp. Pl. 7. 1753.

A shrub, 6°–10° high, the branches long and slender. Leaves firm, tardily deciduous, glabrous, lanceolate or oblong, acute or obtuse at the apex, narrowed at the base, short-petioled, 9″–2′ long, 3″–7″ wide, obscurely veined; panicles dense, short, minutely pubescent; flowers white, about 3″ broad; pedicels very short; stamens included; berries globose, black, 2″–3″ in diameter.

In thickets and along roadsides, escaped from cultivation, Ontario and western New York to Pennsylvania and North Carolina. Native of Europe and Asia. Used for hedges. June-July. Old English names, Primwort, Print, Skedge, Skedgwith.

Family 14. LOGANIÀCEAE Dumort. Anal. Fam. 21. 1829.

Logania Family.

Herbs, shrubs, vines or some tropical genera trees, with opposite or verticillate simple stipulate leaves, or the leaf-bases connected by a stipular line or membrane, and regular perfect 4–5-parted mostly cymose or spicate flowers. Calyx inferior, the tube campanulate, sometimes short or none, the segments imbricated, at least in the bud. Corolla gamopetalous, funnelform, campanulate, or rarely rotate. Stamens as many as the lobes of the corolla, alternate with them, inserted on the tube or throat; anthers 2-celled, the sacs longitudinally dehiscent; pollen-grains simple. Disk usually none. Ovary superior, 2-celled (rarely 3–5-celled); style simple, 2–5-cleft or 2-divided, rarely 4-cleft; ovules numerous or few in each cavity, anatropous or amphitropous. Fruit a 2-valved capsule in our species. Seeds winged or wingless; embryo small, usually straight; endosperm copious; cotyledons narrow or foliaceous; radicle terete or conic.

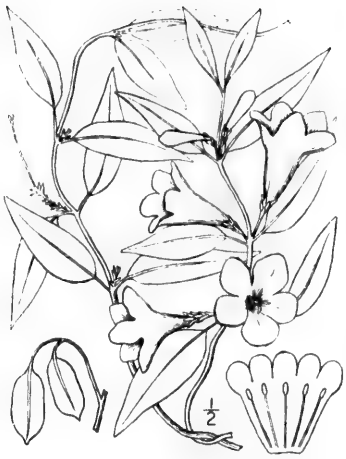
About 30 genera and 400 species, widely distributed in warm and tropical regions.

Style 4-cleft; woody vine; flowers large, yellow. 1. *Gelsemium.*
Style simple, 2-lobed or 2-divided with a common stigma; herbs.
  Corolla-lobes valvate; capsule didymous or 2-lobed; leaves broad.
    Style simple, jointed; spike simple. 2. *Spigelia.*
    Style 2-divided below; spikes cymose. 3. *Cynoctonum.*
  Corolla-lobes imbricate; capsule subglobose; leaves linear. 4. *Polypremum.*

1. GELSÈMIUM Juss. Gen. 150. 1789.

Glabrous twining woody vines; leaves opposite, or rarely ternate, their bases connected by a stipular line; flowers large, yellow, in axillary and terminal nearly sessile cymes, the pedicels scaly-bracteolate. Calyx deeply 5-parted, the segments dry, imbricated. Corolla funnelform, with 5 broad lobes imbricated in the bud. Stamens 5, inserted on the tube of the corolla; anthers linear-oblong. Ovary oblong, 2-celled; style slender or filiform, 4-cleft, the lobes stigmatic along the inner side; ovules numerous in each cavity, on linear placentae. Capsule elliptic, flattened contrary to the partition, septicidally dehiscent, the valves boat-shaped, 2-cleft at the summit; seeds several in each cell, flattened, winged. [From the Italian Gelsomino, the Jessamine.]

Two known species, the following of the southeastern United States, the other of eastern Asia.



1. Gelsemium sempérvirens (L.) Ait.f. Yellow Jessamine. Carolina Jasmine. (Fig. 2847.)

Bignonia sempervirens L. Sp. Pl. 623. 1753.
G. nitidum Michx. Fl. Bor. Am. 1: 120. 1803.
G. sempervirens Ait. f. Hort. Kew. 2: 64. 1811.

Stem slender, climbing or trailing, sometimes 20° long. Leaves lanceolate, oblong-lanceolate or ovate-lanceolate, entire, short-petioled, persistent, evergreen, 1½′–3′ long, 5″–12″ wide; cymes 1–6-flowered; pedicels short; bractlets several, dry, oblong or lanceolate, 1″–2″ long; flowers dimorphous; sepals oblong, obtuse; corolla bright yellow, 1′–1½′ long; stigmas in one form short and anthers exserted, in the other form longer and anthers included; capsule flat, channeled on both sides, 4″–7″ long, cuspidate; seeds very flat, broadly winged at the summit.

In woods and thickets, eastern Virginia to Florida, Texas, Mexico and Guatemala, mostly near the coast. March–Oct. Called also Carolina Wild Woodbine, and Evening Trumpet-flower.

2. SPIGÈLIA L. Sp. Pl. 149. 1753.

Herbs, with opposite membranous entire pinnately veined leaves, small stipules, or the leaf-bases connected by a stipular line, and red yellow or purple flowers in scorpioid cymes or unilateral spikes, or terminal and in the forks of the branches. Calyx deeply 5-parted. Corolla 5-lobed, the lobes valvate, the tube finely 15-nerved. Stamens 5, inserted on the corolla-tube; anthers 2-lobed at the base. Ovules numerous, on peltate placentae; style filiform, jointed near the middle, papillose above; stigma obtuse. Capsule didymous, 2-celled, somewhat flattened contrary to the dissepiment, circumscissile above the persistent base, the 2 carpels becoming 2-valved. Seeds peltate, not winged. [Named for Adrian von der Spigel, 1558–1625, physician.]

About 35 species, all American. Besides the following, 4 others occur in the southern States.

1. Spigelia Marylándica L. Indian or Carolina Pink. (Fig. 2848.)

Lonicera Marylandica L. Sp. Pl. 175. 1753.
Spigelia Marylandica L. Syst. Ed. 12, 734. 1767.

Perennial, stem 4-angled, glabrous or very nearly so, simple, or branched at the base, erect, 1°–2° high. Leaves sessile, ovate, or ovate-lanceolate, acute or acuminate at the apex, rounded or narrowed at the base, 2′–4′ long, ½′–2′ wide, sparingly pubescent on the veins beneath; flowers in a solitary (rarely 2–3) terminal 1-sided peduncled spike; corolla scarlet outside, yellow within, 1′–2′ long, narrowed below, its lobes lanceolate, about 3″ long; calyx-segments subulate, as long as the corolla-lobes or shorter; style jointed below the middle, exserted or included.

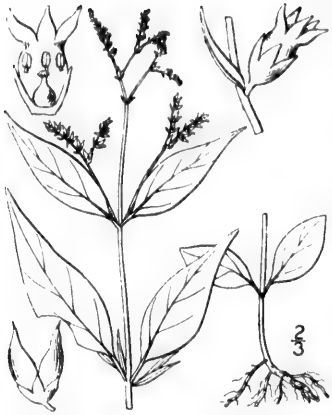
In woods, New Jersey (according to A. Gray) to Wisconsin, south to Florida and Texas. May–July. Called also Pink-root and Worm-grass.

3. CYNÓCTONUM J. G. Gmel. Syst. 2: 443. 1791.

[MITREOLA R. Br. Prodr. Fl. Nov. Holl. 1: 450. 1810.]

Herbs, our species annual, with opposite entire membranous leaves, and minute stipules, or the leaf-bases connected by a stipular line. Flowers small, whitish, in one-sided spikes forming terminal or axillary cymes. Calyx 5-parted. Corolla urn-shaped, 5-lobed, the lobes valvate in the bud. Stamens 5, included; filaments short; anthers cordate. Ovules numerous, on peltate placentae; style short, 2-divided below, united above by the common stigma, the divisions becoming separate. Capsule 2-lobed at the summit; carpels divaricate, dehiscent along the inner side. Seeds numerous, small, tuberculate. [Greek, dog-killing.]

About 5 species, natives of warm and tropical regions.



1. Cynoctonum Mitrèola (L.) Britton. Mitrewort. (Fig. 2849.)

Ophiorhiza Mitreola L. Sp. Pl. 150. 1753.
Anonymos petiolata Walt. Fl. Car. 108. 1788.
Cynoctonum petiolatum Gmel. Syst. 2: 443. 1791.
Mitreola petiolata T. & G. Fl. N. A. 2: 45. 1841.
Cynoctonum Mitreola Britton, Mem. Torr. Club. 5: 258. 1894.

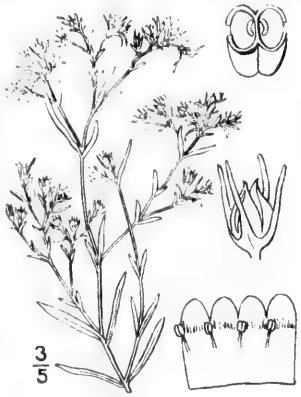
Stem simple, or branched near the base, or sometimes also above, glabrous, slender, erect, terete, 1°–2° high. Leaves lanceolate or ovate, petioled, 1′–3′ long, 3″–1′ wide, acute at both ends, glabrous; cymes terminal and often also in the upper axils, slender-peduncled, the divisions slender, simple or forked; flowers about 1″ broad, numerous, sessile or very nearly so; capsule deeply 2-lobed, compressed, the lobes at length widely diverging, acute, dehiscent by a slit in the ventral suture near the summit.

In wet or moist soil, Virginia to Florida, Texas and Mexico. Also in the West Indies. June–Sept.

4. POLYPRÈMUM L. Sp. Pl. 111. 1753.

A glabrous diffusely branched annual herb, with opposite linear-subulate leaves, their bases connected by a stipular membrane, and small white flowers in terminal bracted cymes. Calyx deeply 4-parted (rarely 5-parted), the segments subulate, scarious-margined. Corolla campanulate, bearded in the throat, shorter than the calyx, 4-lobed (rarely 5-lobed), the lobes imbricated in the bud. Stamens 4 (rarely 5), inserted on the corolla, included; filaments short; anthers ovoid-globose. Ovules numerous in each cavity of the ovary, on oblong placentae; style short; stigma capitate or obscurely 2-lobed. Capsule globose-ovoid, slightly compressed, didymous, loculicidally 2-valved, the carpels at length septicidal. Seeds minute, smooth. [Greek, many-stemmed.]

A monotype, abundant in the warmer parts of America.



1. Polypremum procúmbens L. Polypremum. (Fig. 2850.)

Polypremum procumbens L. Sp. Pl. 111. 1753.

Stems tufted, somewhat rigid, 4-angled, spreading on the ground, ascending or erect, usually much branched, 2′–12′ long. Leaves narrowly linear, ½′–1½′ long, ½″–1″ wide, acute, sessile, minutely rough-toothed on the margins, often with smaller ones fascicled in their axils; flowers solitary, sessile in the forks of the cymes and along their branches, leafy-bracted, the bracts similar to the upper leaves; corolla 1″ or less long; capsule crustaceous, didymous, about 1″ in diameter, slightly 2-lobed, the lobes obtuse.

In dry sandy soil, New Jersey and Pennsylvania to Florida, Kentucky, the Indian Territory, Texas and Mexico. Also in the West Indies. Occurs in cultivated fields as a weed. Probably adventive in the North. May–Sept.

Family 15. **GENTIANÀCEAE** Dumort. Anal. Fam. 20. 1829.

GENTIAN FAMILY.

Bitter mostly quite glabrous herbs, with opposite (rarely verticillate) exstipulate entire leaves, reduced to scales in *Bartonia*, and regular perfect flowers in terminal or axillary clusters, or solitary at the ends of the stem or branches. Calyx inferior, persistent, 4–12-lobed, -toothed or -divided (of 2 sepals in *Obolaria*), the lobes imbricated or not meeting in the bud. Corolla gamopetalous, funnelform, campanulate, club-shaped or rotate, often marcescent, 4–12-lobed or -parted, the lobes convolute or imbricated in the bud. Stamens as many as the lobes of the corolla, alternate with them, inserted on the tube or throat; anthers 2-celled, longitudinally dehiscent; filaments filiform, or dilated at the base. Disk none, or inconspicuous. Ovary superior in our genera, 1-celled or partly 2-celled; ovules numerous, anatropous or amphitropous; style simple, or none;

stigma entire, or 2-lobed, or 2-cleft. Capsule mostly dehiscent by 2 valves. Seeds globose, angular or compressed; endosperm fleshy, copious; embryo small, terete or conic.

About 65 genera and 600 species, widely distributed, most abundant in temperate regions.

Leaves normal; corolla-lobes convolute in the bud.
- Style filiform; anthers usually twisting or recurving when old.
  - Corolla salver-form. — 1. *Erythraea.*
  - Corolla rotate. — 2. *Sabbatia.*
  - Corolla campanulate-funnelform. — 3. *Eustoma.*
- Style short, stout or none; anthers remaining straight.
  - Corolla without nectariferous pits, glands or scales.
    - Corolla funnelform, campanulate or clavate. — 4. *Gentiana.*
    - Corolla rotate. — 5. *Pleurogyne.*
  - 1–2 nectariferous pits, glands or scales at the base of each corolla-lobe.
    - Corolla rotate, a fringed gland at each lobe. — 6. *Frasera.*
    - Corolla campanulate, spurred at the base. — 7. *Tetragonanthus.*

Leaves, at least those of the stem, reduced to scales; corolla-lobes imbricated in the bud.
- Calyx of 4 lanceolate sepals; leaves all reduced to scales. — 8. *Bartonia.*
- Calyx of 2 foliaceous spatulate sepals; upper leaves normal. — 9. *Obolaria.*

1. ERYTHRAÈA Neck. Elem. 2: 10. 1790.

Herbs, mostly annual or biennial, with sessile or amplexicaul leaves, and small or middle sized commonly numerous pink white or yellow flowers in cymes or spikes. Calyx tubular, 5-4-lobed or -divided, the lobes or segments narrow, keeled. Corolla salverform, 5-4-lobed, the tube long or short, the lobes spreading, contorted, convolute in the bud. Stamens 5 or 4, inserted on the corolla-tube; filaments short-filiform; anthers linear or oblong, becoming spirally twisted. Ovary 1-celled, the placentae sometimes intruded; style filiform; stigma 2-lobed. Capsule oblong-ovoid or fusiform, 2-valved. Seed-coat reticulated. [Greek, red, the color of the flowers.]

About 25 species, natives of the Old World and western North and South America. Besides the following, about 8 others occur in the western and southwestern parts of the United States.

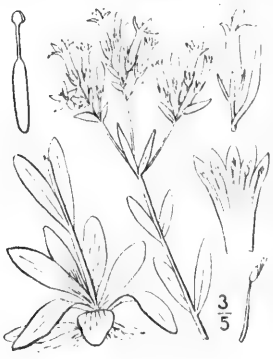
- Flowers spicate-racemose. — 1. *E. spicata.*
- Flowers cymose or cymose-paniculate.
  - Basal leaves tufted. — 2. *E. Centaurium.*
  - No tuft of basal leaves.
    - Flowers cymose-paniculate, numerous. — 3. *E. pulchella.*
    - Flowers few, cymose; western. — 4. *E. exaltata.*

1. Erythraea spicàta (L.) Pers. Spiked Centaury. (Fig. 2851.)

Gentiana spicata L. Sp. Pl. 230. 1753.
Erythraea spicata Pers. Syn. 1: 283. 1805.

Annual, glabrous, erect, strict, usually branched, 6′–18′ high. Leaves oblong or lanceolate-oblong, sessile, obtusish at the apex, clasping at the base, ½′–1½′ long, 2″–7″ wide; flowers pink, sessile, distant and spicate-racemose on the mostly simple and leafless branches, about 8″ long; tube of the corolla somewhat longer than the subulate calyx-segments, 2–3 times as long as the linear-oblong lobes; capsule 4″–5″ long.

Coast of Nantucket, and at Portsmouth, Va. Naturalized from Europe. May-Sept.



2. Erythraea Centaùrium (L.) Pers. Lesser Centaury. Bitter-herb. Bloodwort. (Fig. 2852.)

Gentiana Centaurium L. Sp. Pl. 229. 1753.
Erythraea Centaurium Pers. Syn. 1: 283. 1805.

Annual, glabrous, erect, usually branched, 6′–15′ high. Leaves oblong, apex obtuse, the base narrowed; the lower forming a basal tuft, 1′–2½′ long, 3″–6″ wide; stem leaves smaller, distant, rounded at the sessile or slightly clasping base; flowers numerous, 6″–8″ long, nearly sessile, in compound terminal mostly dense bracteolate cymes; corolla-lobes obtuse, 2½″–3″ long, about as long as the calyx-segments and one-third to one-half as long as the corolla-tube; stigmas oval.

In waste places, Nova Scotia and Quebec to Illinois. Naturalized from Europe. Called also Earth-gall. June–Sept.

3. Erythraea pulchélla (Sw.) Fries. Branching Centaury. (Fig. 2853.)

Gentiana pulchella Sw. Act. Holm. **1783**: 84. *f.* 8, 9. 1783.
Gentiana ramosissima Vill. Hist. Pl. Dauph. **2**: 530. 1787.
Erythraea ramosissima Pers. Syn. **1**: 283. 1805.
Erythraea pulchella Fries, Novit. 74. 1828.

Annual, glabrous, much branched, 3′–8′ high. Leaves oval, ovate or lanceolate, the lower mostly obtuse, 3″–8″ long, the upper usually acutish or acute and smaller; no basal tuft of leaves; flowers pink, cymose-paniculate, all or nearly all of them pedicelled, 5″–6″ long; tube of the corolla 1½–2 times longer than the calyx-segments, its lobes oblong, obtuse, 1½″–2″ long; stigma oval.

In fields and waste places, southern New York to Pennsylvania and Maryland; also in the West Indies. Naturalized from Europe. June–Sept.

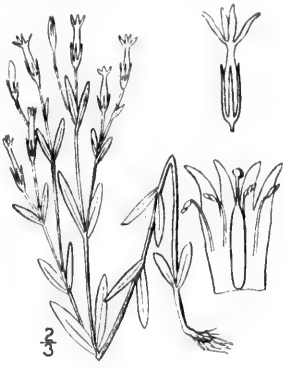
4. Erythraea exaltàta (Griseb.) Coville. Tall or Western Centaury. (Fig. 2854.)

Cicendia exaltata Griseb. in Hook. Fl. Bor. Am. **2**: 69. *pl. 157.* 1834.
Erythraea Douglasii A. Gray, Bot. Cal. **1**: 480. 1876.
Erythraea exaltata Coville, Contr. Nat. Herb. **4**: 150. 1893.

Annual, erect, glabrous, branched, 6′–18′ high, the branches few, erect, slender. Leaves oblong or linear-oblong, sessile, mostly acute at both ends, 5″–10″ long, distant, the basal not tufted; flowers few, terminal and axillary, all slender-pedicelled, 6″–8″ long; tube of the corolla about one-third longer than the calyx-segments, the lobes oblong, obtuse, 1½″–2″ long.

In sandy soil, western Nebraska to Wyoming, Washington, Arizona and California. May–Sept.

Erythraea calycòsa Buckl., a Texan species differing from this in its broader larger obtuse corolla lobes, has been found as a waif in Missouri.



2. SABBÀTIA Adans. Fam. Pl. **2**: 503. 1763.

Annual or biennial erect usually branched glabrous herbs, with opposite or sometimes verticillate sessile or rarely petioled or clasping leaves, and rather large terminal and solitary or cymose pink rose or white flowers. Calyx 4–12-parted or -divided, the tube campanulate, sometimes very short, the lobes or segments usually narrow. Corolla rotate, deeply 4–12-parted. Stamens 4–12, inserted on the short tube of the corolla; filaments filiform, short; anthers linear or oblong, curved, revolute or coiled in anthesis. Ovary 1-celled, the placentae intruded; style 2-cleft or 2-parted, its lobes filiform, stigmatic along their inner sides. Capsule ovoid or globose, 2-valved, many-seeded. Seeds small, reticulated. [In honor of L. Sabbati, an Italian botanist.]

About 14 species, natives of eastern North America and Mexico. Besides the following, some 5 others occur in the southern United States.

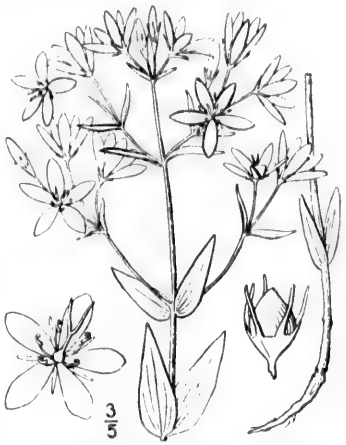
Flowers normally 4–5-parted, sometimes 6–7-parted.
  Branches opposite.
    Style 2-parted to below the middle or nearly to the base; flowers white.
      Leaves lanceolate or ovate, acute; flowers 8″–12″ broad. 1. *S. lanceolata.*
      Leaves linear-oblong or lanceolate, obtuse; flowers 6″–9″ broad. 2. *S. paniculata.*
    Style 2-cleft to about the middle; flowers normally pink.
      Leaves linear-lanceolate, sessile; stem slightly 4-angled. 3. *S. angustifolia.*
      Leaves ovate, cordate-clasping; stem strongly 4-angled. 4. *S. angularis.*
  Branches alternate, the lower sometimes opposite in nos. 5 and 6.
    Calyx-segments foliaceous, longer than the corolla. 5. *S. calycina.*
    Calyx-segments linear or lanceolate, not longer than the corolla.
      Calyx-tube conspicuously 5-ribbed; flowers 1′–2′ broad. 6. *S. campestris.*
      Calyx-tube scarcely ribbed; flowers 1′–1½′ broad.
        Calyx shorter than the corolla; style 2-parted.
          Flower pink with a yellow eye (rarely white); corolla-segments obovate. 7. *S. stellaris.*
          Flowers white, very numerous; corolla-segments spatulate or oblanceolate. 8. *S. Elliottii.*
        Calyx-segments filiform, as long as the corolla; style 2-cleft. 9. *S. campanulata.*
Flowers normally 8–12 parted, 1½′–2½′ broad. 10. *S. dodecandra.*

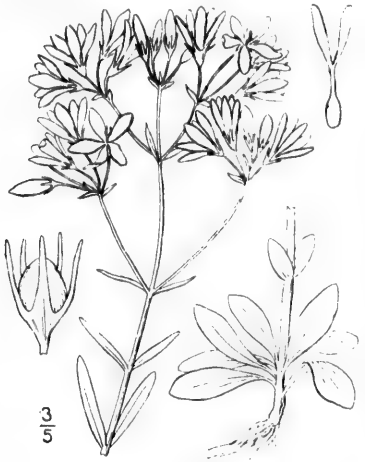
1. Sabbatia lanceolàta (Walt.) T. & G. Lance-leaved Sabbatia. (Fig. 2855.)

Chironia lanceolata Walt. Fl. Car. 95. 1788.
S. lanceolata T. & G.; A. Gray, Man. 336. 1848.

Stem branched above, or simple, slender, somewhat 4-angled, or terete below, 1°–3° high, the branches all opposite. Leaves lanceolate to ovate, acute, or the lower sometimes obtuse, 3–5-nerved, 1′–2′ long, or the lowest shorter, the uppermost reduced to narrow bracts; flowers white, fading yellowish, 8″–12″ broad, usually numerous in bracteolate corymbed cymes; pedicels slender, 2″–7″ long; calyx-lobes filiform-linear, much shorter than the corolla; corolla-segments oblong or slightly obovate; anthers recurved; style 2-parted; capsule ovoid, about 3″ high.

In pine-barren swamps, New Jersey to Florida. May–Sept.





2. Sabbatia paniculàta (Michx.) Pursh. Branching Sabbatia. (Fig. 2856.)

C. paniculata Michx. Fl. Bor. Am. 1: 146. 1803.
S. paniculata Pursh, Fl. Am. Sept. 138. 1814.

Stem usually freely branching, 4-angled, 1°–2½° high, the branches all opposite. Leaves linear, linear-oblong, or lanceolate, obtuse, ½′–1½′ long, the lower commonly shorter and broader, the uppermost small and bract-like; flowers white, 6″–9″ broad, usually very numerous in corymbed cymes; pedicels mostly short, the central flowers of the cymes often nearly sessile; calyx-lobes linear, not more than one-half the length of the corolla; corolla-segments spatulate-oblong; anthers recurved or coiled; style 2-parted; capsule oblong, about 3″ high.

In dry or moist soil, Virginia to Florida. May–Sept.

3. Sabbatia angustifòlia (Michx.) Britton. Narrow-leaved Sabbatia. (Fig. 2857.)

Chironia angularis var. *angustifolia* Michx. Fl. Bor. Am. 1: 146. 1803.
S. brachiata Ell. Bot. S. C. & Ga. 1: 284. 1817.

Stem slender, branched above, slightly 4-angled, 1°–2° high, the branches all opposite. Leaves linear, linear-oblong, or linear-lanceolate, obtuse, or the upper acute, sessile, 1′–2′ long, the uppermost small and bract-like; flowers pink with a yellowish or greenish eye, few in the racemed or short-corymbed cymes, or solitary at the ends of the branches, about 1′ broad; calyx-lobes linear, usually more than one-half the length of the corolla; corolla-segments obovate-oblong; style 2-cleft to about the middle; capsule oblong, 3″–4″ high.

In dry or moist soil, Indiana to Louisiana, east to North Carolina and Florida. May–Sept.

5. Sabbatia calycina (Lam.) Heller. Coast Sabbatia. (Fig. 2859.)

Gentiana calycina Lam. Encyl. 2: 638. 1786.
C. calycosa Michx. Fl. Bor. Am. 1: 146. 1803.
Sabbatia calycosa Pursh, Fl. Am. Sept. 138. 1814.
S. calycina Heller, Bull. Torr. Club, 21. 24. 1894.

Stem somewhat 4-angled, freely branched, 6′–12′ high, the branches alternate, or the lowest sometimes opposite. Leaves oblong or some of them slightly obovate, obtuse or acute, 3-nerved, 1′–2′ long, narrowed to the sessile base or the lower into petioles; flowers usually few, solitary at the ends of the branches or peduncles, 1′–1½′ broad; calyx-lobes linear or spatulate, leaf-like, longer than the spatulate segments of the pink rose-purple or whitish corolla; style 2-parted, capsule ovoid-oblong, 3″–4″ high.

In moist soil, Virginia to Florida, near the coast. Also in Cuba. June–Aug.

4. Sabbatia angulàris (L.) Pursh. Bitter-bloom. Rose-Pink. Square-stemmed Sabbatia. (Fig. 2858.)

Chironia angularis L. Sp. Pl. 190. 1753.
S. angularis Pursh, Fl. Am. Sept. 137. 1814.

Stem usually rather stout and much branched, sharply 4-angled, 2°–3° high, the branches all opposite or the lowest rarely alternate. Leaves ovate, acute at the apex, cordate-clasping at the base, 9″–18″ long, or the lower oblong and obtuse, those of the branches smaller; flowers rose-pink, with a central greenish star, occasionally white, 1′–1½′ broad, usually solitary at the ends of the branches; calyx-lobes linear, one-half the length of the corolla, or less; corolla-segments obovate; style 2-cleft; capsule oblong, about 3″ high.

In rich soil, often in thickets, New York and Pennsylvania to western Ontario and Michigan, south to Florida, the Indian Territory and Louisiana. July–Aug. Flowers fragrant.

6. Sabbatia campéstris Nutt. Prairie Sabbatia. (Fig. 2860.)

Sabbatia campestris Nutt. Trans. Amer. Phil. Soc. (II.) 5: 197. 1833–37.

Stem 4-angled, branched, 6′–15′ high, the branches alternate or dichotomous, or the lowest opposite. Leaves ovate, oblong or lanceolate, mostly obtuse at the apex, sessile or slightly clasping and subcordate at the base, ½′–1′ long; flowers solitary at the ends of the branches and peduncles, 1′–2′ broad; peduncles 1′–2′ long; calyx 5-ribbed or almost 5-winged, its lobes lanceolate, acute, 6″–12″ long, about as long as the obovate lilac corolla-segments, becoming rather rigid in fruit; style 2-cleft; capsule oblong, 3″–4″ high.

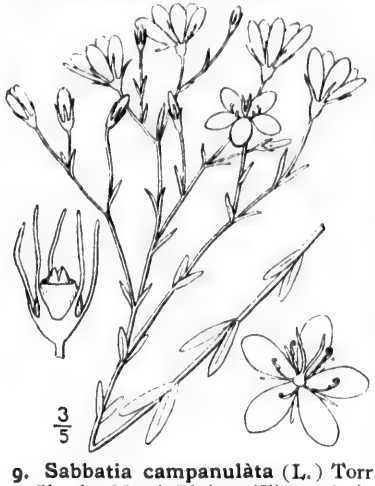
On prairies, Missouri and Kansas to Texas.

7. Sabbatia stellàris Pursh. Sea or Marsh Pink. (Fig. 2861.)

Sabbatia stellaris Pursh, Fl. Am. Sept. 1: 137. 1814.
Chironia stellata Muhl. Cat. Ed. 2, 23. 1818.

Stem nearly terete, or slightly 4-angled, usually much branched, 6′–2° high, the branches alternate. Leaves lanceolate-oblong to linear, sessile, ½′–2′ long, 2″–5″ wide, or the lowest smaller, somewhat obovate and obtuse, the uppermost narrowly linear and bract-like; flowers 9″–18″ broad, usually numerous, solitary at the ends of the branches or slender peduncles; calyx not ribbed, its lobes narrowly linear, shorter than or nearly equalling the oblong or obovate corolla-segments; corolla pink to white with a yellowish starry eye bordered with red; style 2-cleft to below the middle; capsule about 2½″ high.

In salt-meadows, coast of Maine to Florida. Called also Rose-of-Plymouth. July-Sept.



8. Sabbatia Ellióttii Steud. Elliott's Sabbatia. (Fig. 2862.)

Swertia difformis L. Sp. Pl. 226. 1753?
Sabbatia paniculata Ell. Bot. S. C. & Ga. 1: 282. 1817. Not Pursh, 1814.
S. Elliottii Steud. Nomencl. Ed. 2, 2: 489. 1841.

Stem paniculately branched, terete or slightly ridged, 1°–2° high, the branches alternate. Lower leaves obovate or lanceolate-oblong, obtuse, 6″–9″ long, the upper and those of the branches narrowly linear or subulate; flowers very numerous, white, solitary at the ends of the branches and short peduncles, 1′ broad or less; calyx not ribbed, its lobes subulate-linear, one-half as long as the spatulate or oblanceolate segments of the corolla, or less; style 2-parted; capsule about 2½″ high.

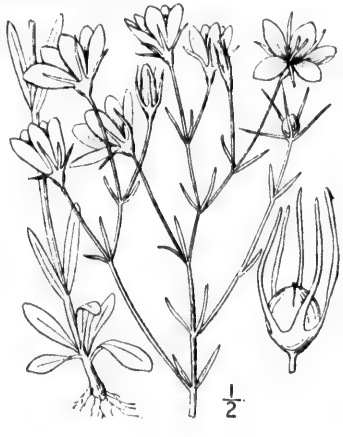
In pine-barrens, North Carolina to Florida. Doubtfully reported from Virginia, but probably occurs there. July-Sept.

9. Sabbatia campanulàta (L.) Torr. Slender Marsh Pink. (Fig. 2863.)

Chironia campanulata L. Sp. Pl. 190. 1753.
Chironia gracilis Michx. Fl. Bor. Am. 1: 146. 1803.
Sabbatia gracilis Salisb. Parad. Lond. *pl. 32.* 1806.
Sabbatia campanulata Torr. Fl. U. S. 1: 217. 1824.

Similar to the preceding species. Stem usually very slender and much branched, 1°–2° high, the branches alternate. Leaves linear, or linear-lanceolate, 1′–1¼′ long, sessile, acute, or the lowest much shorter, obtuse, oblong or oblanceolate, sometimes narrowed into short petioles, the uppermost almost filiform; flowers pink with a yellow eye, about 1′ broad, solitary at the ends of the branches and peduncles, mostly 5-parted; calyx-lobes filiform-linear, equalling the oblong-obovate corolla-segments, or somewhat shorter; style 2-cleft to about the middle; capsule obovoid, about 2½″ high.

In salt marshes and along brackish rivers, rarely in fresh-water swamps, Nantucket to Florida and Louisiana. Also in Cuba. May-Aug.



10. Sabbatia dodecándra (L.) B.S.P. Large Marsh Pink. (Fig. 2864.)

Chironia dodecandra L. Sp. Pl. 190. 1753.
Chironia chloroides Michx. Fl. Bor. Am. 1: 147. 1803.
Sabbatia chloroides Pursh, Fl. Am. Sept. 138. 1814.
Sabbatia dodecandra B.S.P. Prel. Cat. N. Y. 36. 1888.

Stem 1°–2° high, little branched or simple, terete or nearly so, the branches alternate. Basal leaves spatulate, obtuse, 1½′–3′ long; stem leaves lanceolate or oblong-lanceolate, acute, the uppermost usually narrowly linear; flowers few, pink, sometimes white, solitary at the ends of the branches or peduncles, 1½′–2½′ broad; calyx-lobes narrowly linear, about one-half as long as the 9–12 spatulate-obovate corolla-segments; anthers coiled; style deeply 2-cleft, its divisions clavate; capsule globose-oval, 3″ high.

In sandy borders of ponds and along salt marshes, Massachusetts to Florida and Alabama, near the coast. July–Sept.

3. EUSTÒMA Salisb. Parad. Lond. *pl. 34.* 1806.

Erect usually branched glaucous annual herbs, with opposite sessile or clasping entire leaves. Flowers large, blue, purple or white, long-peduncled, axillary and terminal, solitary or paniculate. Calyx deeply 5–6-cleft, the lobes lanceolate, acuminate, keeled. Corolla broadly campanulate, deeply 5–6-lobed, the lobes oblong or obovate, usually erose-denticulate, convolute in the bud. Stamens 5–6, inserted on the throat of the corolla; filaments filiform; anthers oblong, versatile, at length recurved, or remaining nearly straight. Ovary 1-celled; style filiform; stigma 2-lamellate. Capsule oblong or ovoid, 2-valved. Seeds small, numerous, foveolate. [Greek, open-mouth, referring to the corolla.]

Two species, natives of the southern United States, Mexico and the West Indies.

1. Eustoma Russellìanum (L.) Griseb. Russell's Eustoma. (Fig. 2865.)

Lisianthus Russellianus Hook. Bot. Mag. *pl. 3626.* 1839.
Lisianthus glaucifolius Nutt. Trans. Am. Phil. Soc. (II.) 5: 197. 1833–37. Not Jacq. 1786.
E. Russellianum Griseb. in DC. Prodr. 9: 51. 1845.

Stem terete, rather stout, 1°–2½° high. Leaves oblong or ovate-oblong, 3–5-nerved, the upper usually acute at the apex, cordate-clasping at the base, 1½′–3′ long, the lower usually obtuse at the apex and narrowed to a sessile or slightly auricled base; peduncles 1′–4′ long, stout, bracted at the base, the bracts lanceolate-subulate, small; flowers 2′–3′ broad; calyx-lobes long-acuminate, shorter than the purple corolla; corolla-lobes obovate, about 4 times as long as the tube; style slender; anthers remaining nearly straight; capsule oblong, pointed.

On prairies, Nebraska to Louisiana, Texas and Mexico. May–Aug.

4. GENTIÀNA L. Sp. Pl. 227. 1753.

Erect mostly perennial and glabrous herbs, with opposite or rarely verticillate, entire sessile or short-petioled leaves. Flowers blue, purple, yellow or white, solitary or clustered, terminal or axillary. Calyx tubular, 4–7- (usually 5-) cleft. Corolla tubular, clavate, campanulate, salverform or funnelform (rotate in some exotic species), 4–7-lobed, often with membranous plaits in the sinuses, the lobes entire or fimbriate. Stamens as many as the lobes of the corolla and inserted on its tube, included; anthers connate into a tube, or separate, not recurved or coiled. Ovary 1-celled; ovules very numerous; style short or none; stigma cleft into 2 lamellae. Capsule sessile or stipitate, 2-valved. Seeds numerous, sometimes covering the whole inner wall of the capsule, wingless or winged. [Named for King Gentius of Illyria.]

About 300 species, mostly natives of the north temperate and arctic zones and the Andes of South America. Besides the following, some 30 others occur in the western parts of North America.

* Corolla without plaits or teeth in the sinuses.

Corolla-lobes fringed or serrate; flowers 1′–3′ long.
- Corolla enclosed in the swollen wing-angled calyx. 1. *G. ventricosa.*
- Corolla conspicuously longer than the wingless calyx.
  - Corolla-lobes fringed all around their summits; leaves lanceolate. 2. *G. crinita.*
  - Corolla-lobes fringed mainly on the margins; leaves linear. 3. *G. detonsa.*

Corolla-lobes with entire or rarely denticulate margins; flowers 6″–12″ long.
- Corolla-lobes fimbriate-crested at the base, acute. 4. *G. acuta.*
- Corolla-lobes naked, subulate-acuminate.
  - Calyx-lobes unequal; flowers mostly 4-parted. 5. *G. propinqua.*
  - Calyx-lobes equal; flowers 5-parted. 6. *G. quinquefolia.*

* * Corolla with membranous toothed or lobed plaits in the sinuses.

Margins of leaves and calyx-lobes scabrous or ciliate; seeds winged.
- Anthers separate, or merely connivent.
  - Stems usually clustered; calyx-lobes unequal; corolla narrowly funnelform. 7. *G. affinis.*
  - Stems mostly solitary; calyx-lobes equal; corolla campanulate-funnelform. 8. *G. puberula.*
- Anthers cohering in a ring or short tube.
  - Corolla-lobes distinct, longer than or equalling the plaits.
    - Flowers 1–4; corolla campanulate-funnelform, its lobes 2–3 times as long as the plaits. 9. *G. Elliottii.*
    - Flowers several or numerous; corolla club-shaped, its lobes not much longer than the plaits. 10. *G. Saponaria.*
  - Corolla-lobes none or minute, the plaits very broad. 11. *G. Andrewsii.*

Margins of leaves and calyx-lobes smooth or nearly so.
- Flowers clustered, sessile, 2-bracteolate under the calyx.
  - Corolla-lobes ovate, twice as long as the plaits; leaves broad, acuminate; seeds winged. 12. *G. flavida.*
  - Corolla-lobes rounded, little longer than the plaits; leaves narrow; seeds winged. 13. *G. linearis.*
  - Corolla-lobes ovate, acute, much longer than the broad plaits; leaves broad; seeds winged. 14. *G. rubricaulis.*
  - Corolla-lobes triangular-lanceolate; leaves obovate; seeds wingless. 15. *G. villosa.*
- Flowers solitary, peduncled, not bracteolate; leaves linear. 16. *G. Porphyrio.*

1. Gentiana ventricòsa Griseb. Swollen Gentian. (Fig. 2866.)

Gentiana ventricosa Griseb. in Hook. Fl. Bor. Am. 2: 65. *pl. 152.* 1834.

Annual; stem strict, terete, branched above, about 1° high. Basal leaves obovate, small, those of the stem ovate-oblong, obtuse or acute at the apex, rounded or subcordate at the base, 1′ long, 4″–6″ wide; flowers few, solitary at the ends of stout peduncles, 4-parted; calyx inflated, ovoid, about 9″ high, 4″–5″ thick, wing-angled, enclosing the corolla; corolla-lobes oblong, obtuse, lacerate-serrate; ovary elliptic-oblong.

Grand Rapids of Saskatchewan, between Cumberland House and Hudson Bay (Drummond). Not recently collected.

2. Gentiana crinìta Froel. Fringed Gentian. (Fig. 2867.)

Gentiana crinita Froel. Gen. 112. 1796.

Annual; stem leafy, usually branched, 1°–3° high, the branches erect, somewhat 4-angled. Basal and lower leaves obovate, obtuse, the upper lanceolate or oblong-lanceolate, 1′–2′ long, acute or acuminate at the apex, sessile by a rounded or subcordate base; flowers mostly 4-parted, several or numerous, about 2′ high, solitary at the ends of the usually elongated peduncles; calyx-lobes lanceolate, acuminate, their midribs decurrent on the angles of the tube; corolla bright blue, rarely white, narrowly campanulate, its lobes obovate, rounded, conspicuously fringed all around their summits, scarcely fringed on the sides, spreading when mature; capsule spindle-shaped, stipitate; seeds scaly-hispid.

In moist woods and meadows, Quebec to Minnesota, south to Georgia and Iowa. Sept.–Oct.

3. Gentiana detónsa Rottb. Smaller Fringed Gentian. (Fig. 2868.)

Gentiana detonsa Rottb. Act. Hafn. 10: 254. *pl.* 1. 1770.
Gentiana serrata Gunner. Fl. Norv. 2: 101. 1772.

Annual; similar to the preceding species but smaller; stem simple, or little branched, 3′–18′ high. Basal and lower leaves spatulate, obtuse, the upper linear or linear-lanceolate, 1′–2½′ long, 2″–4″ wide; flowers 1–6, solitary at the ends of elongated erect peduncles, mostly 4-parted, about 1½′ high; calyx-lobes lanceolate, acuminate, their midribs decurrent on the tube; corolla narrowly campanulate, its lobes spatulate-oblong, strongly fringed on both sides, entire or somewhat fimbriate or toothed around the apex; capsule short-stipitate; seeds scaly-hispid.

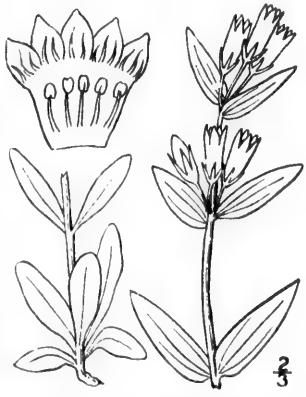
In wet places, Newfoundland to Alaska, south to Anticosti, western New York, Minnesota, in the Rocky Mountains to Arizona and in the Sierra Nevada. Also in northern Europe and Asia. July–Sept.

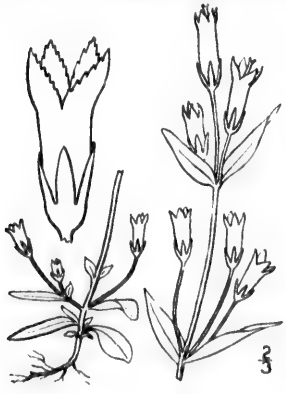
4. Gentiana acùta Michx. Northern Gentian. (Fig. 2869.)

Gentiana acuta Michx. Fl. Bor. Am. 1: 177. 1803.
Gentiana Amarella var. *acuta* Herder, Act. Hort. Petrop. 1: 428. 1872.

Annual; stem leafy, slightly wing-angled, simple or branched, 6′–20′ high. Basal and lower leaves spatulate or obovate, obtuse, the upper lanceolate, acuminate or acute at the apex, rounded or subcordate at the base, sessile, or somewhat clasping, ½′–2′ long; flowers numerous, racemose-spicate, 5″–8″ high, the pedicels 2″–6″ long, leafy-bracted at the base; calyx deeply 5-parted (rarely 4-parted), its lobes lanceolate; corolla tubular-campanulate, 5-lobed (rarely 4-lobed), blue, its lobes lanceolate, acute, each with a fimbriate crown at the base; capsule sessile.

In moist or wet places, Labrador to Alaska, Quebec, Minnesota, south in the Rocky Mountains to Arizona and Mexico, and in the Sierra Nevada. Also in Europe and Asia. Perhaps not specifically distinct from the Old World *G. Amarella*. Felwort. Summer.





5. Gentiana propínqua Richards. Four-parted Gentian. (Fig. 2870.)

Gentiana propinqua Richards. Frank. Journ. 734. 1823.

Stems slender, usually branched from the base and sometimes also above, slightly wing-angled, 2′–7′ high. Basal leaves spatulate, obtuse, the upper distant, oblong or lanceolate, ½′–1½′ long, acute or obtusish at the apex, rounded at the slightly clasping base, obscurely 3-nerved; flowers few or several, solitary on slender peduncles, mostly 4-parted, 8″–10″ high; calyx 4-cleft, 2 of the lobes oblong, the others linear-lanceolate; corolla blue or bluish, glandular within at the base, its lobes ovate-lanceolate, entire or denticulate; capsule linear, at length a little longer than the corolla.

Labrador to Alaska and British Columbia. Summer.

6. Gentiana quinquefòlia L. Stiff Gentian. Ague-weed. (Fig. 2871.)

Gentiana quinquefolia L. Sp. Pl. 230. 1753.
Gentiana quinqueflora Lam. Encycl. 2: 643. 1786.

Annual; stem ridged, usually branched, 2′–2° high, quadrangular. Basal leaves spatulate, obtuse, those of the stem ovate, acute at the apex, clasping and subcordate or rounded at the base, 3–7-nerved, ½′–2′ long; flowers in clusters of 1–7 at the ends of the branches, or also axillary; pedicels slender, 2″–7″ long; calyx one-fourth to one-third the length of the corolla, its lobes narrow, or sometimes foliaceous, acute; corolla tubular-funnelform, blue, its lobes triangular, very acute, entire, not crested at the base; capsule stipitate; seeds globose, wingless.

In dry or moist soil, Maine and Ontario to Michigan, south to Florida and Missouri. Ascends to 6300 ft. in North Carolina. Aug.–Oct.

Gentiana quinquefòlia occidentàlis (A. Gray) A. S. Hitchcock, Trans. St. Louis Acad. 5: 508. 1891.
Gentiana quinqueflora var. *occidentalis* A. Gray, Man. 359. 1848.

Usually taller and paniculately branched; corolla more broadly funnelform; calyx-lobes foliaceous, reaching to the middle of the corolla. Ohio to Minnesota, south to Tennessee and Louisiana.

7. Gentiana affinis Griseb. Oblong-leaved Gentian. (Fig. 2872.)

Gentiana affinis Griseb. in Hook. Fl. Bor. Am. 2: 56. 1834.

Perennial; stems clustered from deep roots, minutely puberulent, simple, 6′–18′ high. Leaves linear-oblong to lanceolate-oblong, obtuse or acutish, rounded or narrowed at the base, firm, roughish-margined, indistinctly nerved, ½′–1½′ long, the floral smaller; flowers few, numerous, or rarely single, 5-parted, sessile and solitary or clustered in the axils of the upper leaves, about 1′ high, not bracted under the calyx; calyx-lobes linear or subulate, unequal, the longer about equalling the tube, the smaller sometimes minute; corolla narrowly funnelform, blue, its lobes ovate, acute or mucronate, entire, spreading, with laciniate appendages in the sinuses; anthers separate; seeds broadly winged.

In moist soil, Minnesota to British Columbia, south in the Rocky Mountains to New Mexico, and in the Sierra Nevada. Aug.–Oct.

8. Gentiana pubérula Michx. Downy Gentian. (Fig. 2873.)

Gentiana puberula Michx. Fl. Bor. Am. 1: 176. 1803.

Perennial; stems usually solitary, leafy, 8′–18′ high, minutely puberulent, or glabrous, nearly terete. Leaves firm, lanceolate, or the lower oblong, roughish-margined, indistinctly nerved, pale beneath, narrowed or rounded at the base, 1′–3′ long; flowers sessile or nearly so in the upper axils, rarely solitary and terminal, 2-bracteolate under the calyx, 1½′–2′ high; calyx-lobes linear-lanceolate, equal, about as long as the tube, rough; corolla campanulate-funnelform, 2–3-times as long as the calyx, its lobes ovate, entire, spreading, much longer than the cleft or laciniate appendages; anthers at first connivent, soon separate; seeds oblong, broadly winged.

On prairies, Ohio to the Northwest Territory, Georgia and Kansas. Aug.–Oct.

9. Gentiana Ellióttii Chapm. Elliott's Gentian. (Fig. 2874.)

Gentiana Catesbaei Ell. Bot. S. C. & Ga. 1: 339. 1817. Not Walt. 1788.
Gentiana Elliottii Chapm. Fl. S. States, 356. 1860.
Gentiana scaberrima Kusnezow, Act. Hort. Petrop. 13: 59. 1893.

Perennial; roots a cluster of thick fibres; stems slender, leafy, terete, minutely rough-puberulent, simple, 8′–2° high. Leaves ovate or ovate-lanceolate, acute or acutish at the apex, rounded at the base, thin, roughish-margined, 1′–2′ long, 3-nerved, or the lower much smaller and obtuse; flowers 1–4, terminal, or rarely 1 or 2 in the upper axils, about 2′ long, sessile, 2-bracteolate under the calyx; calyx-lobes oblong or lanceolate, foliaceous, longer than the tube; corolla campanulate-funnelform, blue, its lobes ovate, obtuse, sometimes mucronate, entire, 3″–4″ long, about twice as long as the fimbriate or toothed appendages; anthers cohering in a tube; seeds oblong, broadly winged.

In moist soil, Virginia to Florida. Sept.–Oct.

10. Gentiana Saponària L. Soapwort Gentian. (Fig. 2875.)

Gentiana Saponaria L. Sp. Pl. 228. 1753.
Gentiana Catesbaei Walt. Fl. Car. 109. 1788.

Perennial; stem erect or ascending, terete, slender, simple or with short erect axillary branches, glabrous, or minutely rough-puberulent above, 1°–2½° high, leafy. Leaves lanceolate, ovate-lanceolate or oblong, usually acute at both ends, 3–5-nerved, roughish-margined, 2′–4′ long, the lowest obovate and smaller; flowers 1′–2′ high, in sessile terminal and usually also axillary clusters of 1–5, 2-bracteolate under the calyx; calyx-lobes oblong or spatulate, ciliolate; corolla blue, club-shaped, its lobes erect, obtuse, equalling or longer than the cleft or lacerate appendages; anthers cohering in a tube; capsule stipitate; seeds broadly winged.

In wet soil, Ontario to Minnesota, Florida and Louisiana. Aug.–Oct.

11. Gentiana Andréwsii Griseb. Closed or Blind Gentian. (Fig. 2876.)

Gentiana alba Muhl. Cat. Ed. 2, 29. 1818?
Gentiana Andrewsii Griseb. in Hook. Fl. Bor. Am. 2: 55. 1834.

Perennial; similar to the preceding species, stout, glabrous, 1°–2° high, simple, leafy. Leaves ovate to lanceolate, 3–7-nerved, acuminate at the apex, narrowed or sometimes rounded at the base, 2′–4′ long, rough-margined, the lowest oblong or obovate, smaller; flowers 1′–1½′ high in a terminal sessile cluster and commonly 1 or 2 in the upper axils, 2-bracteolate under the calyx; calyx-lobes lanceolate or ovate, ciliolate, usually spreading; corolla oblong, club-shaped, blue, or occasionally white, nearly or quite closed, its lobes obsolete, the intervening appendages very broad, light colored, opposite the stamens; anthers cohering in a tube; capsule stipitate; seeds oblong, winged.

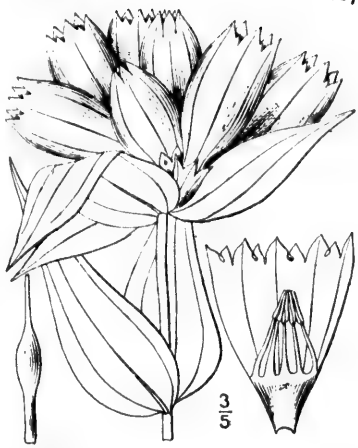
In moist soil, Quebec to the Northwest Territory, Georgia and Missouri. Aug.–Oct.

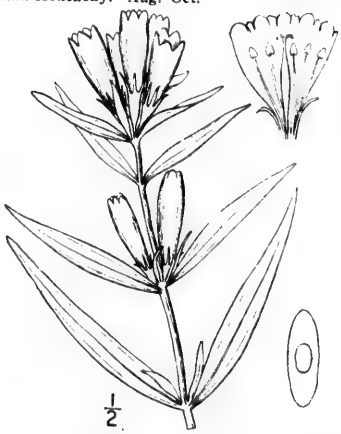
12. Gentiana flávida A. Gray. Yellowish Gentian. (Fig. 2877.)

Gentiana flavida A. Gray, Am. Journ. Sci. (II.) 1: 80. 1846.
G. alba A. Gray, Man. 360. 1848. Not Muhl. 1818.

Perennial; stem stout, terete, glabrous, simple, erect or ascending, 1°–3° high. Leaves ovate-lanceolate or oblong-lanceolate, smooth-margined, acuminate at the apex, subcordate, clasping or rounded at the base, 2′–5′ long, 1′–2′ wide; flowers several or numerous in a sessile terminal cluster and sometimes 1 or 2 in the upper axils, 1½′–2′ high, 2-bracteolate under the calyx; calyx-lobes ovate, acute, smooth or minutely rough-margined, shorter than the tube; corolla campanulate-funnelform, open, greenish or yellowish white, its lobes ovate, acute or obtuse, twice as long as the crose-denticulate appendages; anthers cohering in a tube; capsule stipitate; seeds winged.

In moist soil, Ontario to Virginia, Minnesota and Kentucky. Aug.–Oct.





13. Gentiana lineàris Froel. Narrow-leaved Gentian. (Fig. 2878.)

Gentiana linearis Froel. Gent. 37. 1796.
Gentiana Saponaria var. *linearis* Griseb. in Hook. Fl. Bor. Am. 2: 55. 1834.

Perennial; glabrous throughout; stem slender, terete, simple, 6′–2° high, leafy. Leaves linear or linear-lanceolate, smooth-margined, acute at both ends, 3-nerved, 1½′–3′ long, 2″–5″ wide; flowers 1′–1¾′ high in a terminal cluster of 1–5 and sometimes also in the upper axils; calyx-lobes linear or lanceolate, shorter than the tube; corolla erect, blue, oblong-funnelform, open, its lobes erect, rounded, 1″–2″ long, slightly longer than the entire or 1–2-toothed appendages; anthers coherent in a tube, or at length distinct; capsule stipitate; seeds winged.

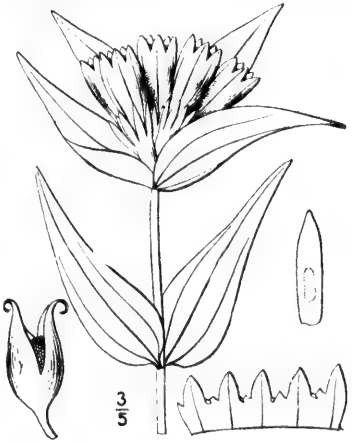
In bogs and on mountains, New Brunswick and Ontario to Maryland. Ascends to 5000 ft. in the Adirondacks. Aug.–Sept.

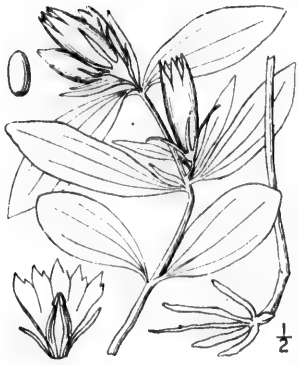
14. Gentiana rubricaùlis Schwein. Red-stemmed Gentian. (Fig. 2879.)

Gentiana rubricaulis Schwein. in Keating's Narr. Long's Exp. 2: 384. 1824.
Gentiana linearis var. *lanceolata* A. Gray, Syn. Fl. 2: Part 1, 123. 1878.
Gentiana linearis var. *latifolia* A. Gray, Proc. Am. Acad. 22: 309. 1887.

Perennial; glabrous; stem terete, 1°–2° high. Leaves rather distant, lanceolate or ovate-lanceolate, acuminate, rounded at the base, smooth-margined, 2′–3′ long, the lower narrower and obtuse; flowers about 1½′ high in a sessile terminal cluster, 2-bracteolate under the calyx; calyx-lobes unequal, the larger about as long as the tube; corolla greenish blue or bright blue, club-shaped, its lobes ovate, acute or acutish, much longer than the broad 1–2-toothed appendages; anthers coherent, or at length distinct; seeds oblong, winged.

In wet soil, New Brunswick to central New York, western Ontario and Minnesota. Aug.–Sept.





15. Gentiana villòsa L. Striped Gentian. (Fig. 2880.)

Gentiana villosa L. Sp. Pl. 228. 1753.
Gentiana ochroleuca Froel. Gent. 35. 1796.

Perennial, glabrous or nearly so; stem simple, slender, terete, 6′–18′ high. Leaves obovate, obtuse or the upper acute, narrowed at the base, faintly 5-nerved, 1′–3′ long, the lower much smaller; flowers several in a terminal sessile cluster and sometimes also in the upper axils, nearly 2′ long, 2-bracteolate under the calyx; calyx-lobes unequal, linear, longer than the tube; corolla greenish white, striped within, oblong-funnelform, open, its lobes triangular-ovate or ovate-lanceolate, erect, much longer than the oblique entire or 1–2-toothed appendages; seeds oval, wingless.

In shaded places, southern New Jersey and Pennsylvania to Florida and Louisiana. Sept.–Nov.

16. Gentiana Porphýrio J. F. Gmel. One-flowered Gentian. (Fig. 2881.)

Gentiana purpurea Walt. Fl. Car. 109. 1788. Not L. 1753.
Gentiana Porphyrio J. F. Gmel. Syst. 2: 462. 1791.
Gentiana angustifolia Michx. Fl. Bor. Am. 1: 177. 1803.

Perennial, glabrous; stem erect or ascending, simple or branched, 6′–18′ high. Leaves linear, firm, acute or blunt at the apex, 1′–2′ long, 1″–2″ wide, or the upper and lower shorter; flowers solitary at the ends of the stem or branches, short-peduncled, about 2′ high; calyx-lobes linear, longer than the tube; corolla funnelform, bright blue, sometimes brown-dotted within, its lobes ovate, acutish, spreading, 5″–7″ long, three times as long as the conspicuously laciniate appendages, or more; seeds oblong, wingless.

In moist pine barrens, southern New Jersey to Florida. Aug.–Oct.

5. PLEURÓGYNE Eschol. Linnaea, 1: 187. 1825.

Slender usually branched annual glabrous herbs, with opposite leaves, and rather large flowers in terminal narrow racemes or panicles, or solitary at the ends of the slender peduncles. Calyx deeply 4–5-parted; segments narrow, often unequal. Corolla rotate, 4–5-parted; lobes ovate or lanceolate, convolute, acute, with a pair of narrow appendages at the base. Stamens 4 or 5, inserted on the corolla-tube; filaments slender or filiform; anthers ovate, sagittate, straight. Ovary 1-celled; ovules numerous; style none; stigma decurrent along the sutures of the ovary. Capsule 2-valved. Seeds small and numerous. [Greek, referring to the lateral stigmatic surfaces.]

About 7 species, of the colder parts of the northern hemisphere, the following in North America.

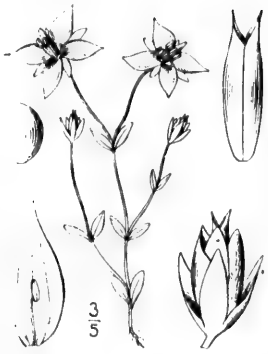
Leaves linear or lanceolate; sepals linear. 1. *P. rotata.*
Leaves spatulate or lanceolate; sepals ovate to lanceolate. 2. *P. Carinthiaca.*

1. Pleurogyne rotàta (L.) Griseb. Pleurogyne. (Fig. 2882.)

Swertia rotata L. Sp. Pl. 226. 1753.
Pleurogyne rotata Griseb. Gent. 309. 1839.

Stem erect, usually 6′–15′ high, sometimes lower, simple, or with nearly erect branches. Leaves linear to lanceolate, ½′–2′ long, 1″–2″ wide, or the basal spatulate or oblong, shorter and sometimes broader; sepals narrowly linear, or linear-lanceolate, about the length of the lanceolate to oblong-lanceolate corolla-segments which are 4″–6″ long; capsule narrowly oblong.

Greenland and Labrador to Alaska, south in the Rocky Mountains to Colorado. Also in Europe and Asia. Summer.



2. Pleurogyne Carinthiaca (Wulf.) Griseb. Smaller Pleurogyne. (Fig. 2883.)

Swertia Carinthiaca Wulf.; Jacq. Misc. 2: 53. 1781.

Pleurogyne Carinthiaca Griseb. Gent. 310. 1839.

Similar to the preceding species, but mostly smaller and more slender, rarely over 6′ high, the stems or branches 1–few-flowered; leaves spatulate, ovate, oblong, or lanceolate, 3″–6″ long; sepals ovate to lanceolate, shorter than the corolla-segments or at length equalling them, these 3″–6″ long, ovate, and acute; capsule ovoid-oblong.

Eastern Quebec. The American plant was separated from the European by Dr. Gray as var. *pusilla*.

6. FRÀSERA Walt. Fl. Car. 87. 1788.

Perennial or biennial erect glabrous mostly tall herbs, with opposite or verticillate leaves, and rather large white yellowish or bluish flowers, in terminal cymose panicles or thyrses. Calyx 4-parted, the segments narrow. Corolla rotate, 4-parted, the lobes convolute in the bud, each bearing 1 or 2 fimbriate or fringed glands within. Stamens 4, inserted on the base of the short corolla-tube; filaments subulate or filiform, sometimes united at the base; anthers oblong, versatile. Ovary ovoid, 1-celled; style slender or short, but distinct; stigma 2-lobed or nearly entire. Capsule ovoid, coriaceous, somewhat compressed, 2-valved, few-seeded. Seeds flattened, smooth, margined or narrowly winged. [In honor of John Fraser, a botanical collector.]

Eight species, natives of North America, all but the following far western.

1. Frasera Carolinénsis Walt. American Columbo. (Fig. 2884.)

Frasera Carolinensis Walt. Fl. Car. 87. 1788.

Stem 3°–4° high, stout. Leaves mostly verticillate in 4's, those of the stem lanceolate or oblong, acute or acutish, 3′–6′ long, the basal ones spatulate or oblanceolate, usually much larger, the uppermost small and bract-like; inflorescence thyrsoid-paniculate, large, often 2° long; flowers slender-pedicelled, about 1′ broad; corolla yellowish white with brown-purple dots, its lobes broadly oblong, bearing a large circular long-fringed gland at or below the middle; style 2″–3″ long; stigma 2-lobed; capsule much compressed, 6″–8″ high, longer than the calyx.

In dry soil, western New York and Ontario to Wisconsin, south to Georgia and Kentucky. June–Aug.

7. TETRAGONÁNTHUS S. G. Gmel. Fl. Sib. 4: 114. 1769.

[HALENIA Borck. in Roem. Archiv, 1: 25. 1796.]

Annual or perennial usually tufted glabrous herbs, with opposite leaves, and middle-sized white yellowish purple or blue flowers in terminal and axillary often panicled cymes. Calyx deeply 4-cleft or 4-parted, the segments lanceolate or oblong. Corolla campanulate, 4–5-cleft, the lobes convolute in the bud, each with a hollow spur or projection below, which is glandular at the bottom within. Stamens 4 or 5, inserted near the base of the corolla; filaments filiform or subulate; anthers oblong, versatile. Ovary 1-celled, the placentae more or less intruded; ovules numerous; style very short, sometimes none; stigma 2-lobed. Capsule ovoid or oblong, 2-valved. Seeds globose-ovoid, smooth. [Greek, alluding to the four-parted flowers.]

About 30 species, natives of mountainous regions of North America, South America and Asia. Besides the following, another occurs in the southwestern United States.

1. Tetragonanthus defléxus (J. E. Smith) Kuntze. Spurred Gentian. (Fig. 2885.)

Swertia deflexa J. E. Smith in Rees' Cyclop. no. 8. 1816.
Halenia deflexa Griseb. in Hook. Fl. Bor. Am. 2: 67. *pl. 155.* 1834.
Tetragonanthus deflexus Kuntze, Rev. Gen. Pl. 431. 1891.

Annual; stem simple or branched, slender, erect, 6′–20′ high. Basal leaves obovate or spatulate, obtuse, narrowed into petioles; stem-leaves ovate or lanceolate, acute, sessile, 3–5-nerved, 1′–2′ long, the uppermost much smaller; calyx-segments lanceolate or spatulate, acute or acuminate; corolla purplish or white, about 4″ high, its lobes ovate, acute, the spurs deflexed or descending, one-fourth to one-half the length of the corolla; capsule narrowly oblong, 6″–7″ long, about twice as long as the calyx.

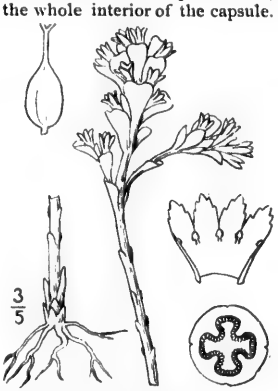
In moist woods and thickets, Labrador to Massachusetts and southern New York, west to Michigan and the Indian Territory. July–Aug.

Tetragonanthus defléxus Brentoniànus (Griseb.) Britton, Mem. Torr. Club, 5: 261. 1894.
Halenia Brentoniana Griseb. in Hook. Fl. Bor. Am. 2: 68. 1834.
Low, 3′–8′ high; spurs shorter and thicker. Newfoundland to Anticosti.

8. OBOLÀRIA L. Sp. Pl. 632. 1753.

A low glabrous perennial herb, the stem simple or branched, the lower leaves reduced to opposite scales, the upper foliaceous, subtending the racemose-spicate or thyrsoid white or purplish flowers. Calyx of 2 spatulate sepals. Corolla oblong-campanulate, 4-cleft, the lobes imbricated, at least in the bud. Stamens 4, inserted in the sinuses of the corolla; filaments slightly longer than the ovate sagittate anthers. Ovary 1-celled, with 4 internal placental projections; ovules numerous; style distinct; stigma 2-lamellate. Capsule ovoid, 2-valved or irregularly bursting. Seeds minute, covering the whole interior of the capsule. [Greek, obolus, a coin, alluding to the thick round leaves.]

A monotypic genus of eastern North America.



1. Obolaria Virgínica L. Pennywort. (Fig. 2886.)

Obolaria Virginica L. Sp. Pl. 632. 1753.

Stems 3′–6′ high from a perennial root of thick fleshy fibres, bearing 2–6 pairs of thick small obtuse scales in place of leaves. Floral leaves broadly obovate-cuneate, obtuse, purplish, 4″–6″ long; flowers sessile or nearly so in the axils, in clusters of 1–4 (usually 3), and terminal; corolla about 5″ long, cleft to about the middle, the lobes oblong, obtuse, entire, or denticulate; stamens included; capsule 2½″ long.

In rich woods and thickets, New Jersey to Georgia, west to Illinois and Texas. Ascends to 2600 ft. in Virginia. April–May.

9. BARTÒNIA Muhl.; Willd. Neue Schrift. Ges. Nat. Fr. Berlin, 3: 444. 1801.

Slender or filiform erect glabrous annual or biennial herbs, the leaves reduced to minute opposite subulate scales, or some of them alternate, and small white or yellowish racemose or paniculate flowers, or these rarely solitary and terminal. Calyx deeply 4-parted, the segments lanceolate, acuminate, keeled. Corolla campanulate, deeply 4-cleft, the lobes imbricated in the bud. Stamens 4, inserted at the sinuses of corolla; filaments slender, much longer than the ovate sagittate anthers. Ovary 1-celled, the placentae intruded; ovules numerous; style very short or none; stigma 2-lobed. Capsule ovoid-oblong, acute, 2-valved. Seeds minute, covering the whole inner surface of the capsule. [In honor of Professor Benjamin Smith Barton, 1766–1815, of Philadelphia.]

Two species, natives of eastern North America.

Corolla yellowish, 1½″–2″ long, its lobes oblong. 1. *B. Virginica.*
Corolla white, 3″–4″ long, its lobes spatulate. 2. *B. verna.*

1. Bartonia Virginica (L.) B.S.P. Yellow Bartonia. (Fig. 2887.)

Sagina Virginica L. Sp. Pl. 128. 1753.
B. tenella Willd. Neue Schrift. Ges. Nat. Fr. Berlin, 3: 445. 1801.
Bartonia Virginica B.S.P. Prel. Cat. N. Y. 36. 1888.

Stem rather stiff, almost filiform, 4′–15′ high, simple, or with few erect branches above, 5-angled, yellowish green, sometimes twisted. Subulate scales 1″–2″ long, appressed, the basal pairs close together, the upper distant; flowers mostly opposite, peduncled; pedicels ascending or erect, 2″–6″ long; corolla greenish yellow, 1½″–2″ long, its lobes oblong, acutish or obtuse, somewhat exceeding the calyx; stamens included; ovary 4-sided; capsule about 1½″ long.

In moist soil, Newfoundland to Florida, west to Michigan and Louisiana. July–Sept.

Bartonia Móseri (Steud. & Hochst.) Rob. & Schrenk, a plant very similar to this species, but with alternate leaf-scales and corolla twice as long as the calyx, reported to range from Louisiana to Newfoundland, may perhaps be distinct, but it is little known. Plants of *B. Virginica* with alternate leaf-scales are sometimes collected with the typical opposite-scaled form.

2. Bartonia vérna (Michx.) Muhl. White Bartonia. (Fig. 2888.)

Centaurella verna Michx. Fl. Bor. Am. 1: 97. *pl. 12. f. 1.* 1803.

Bartonia verna Muhl. Cat. 16. 1813.

Stem thicker and less rigid than that of the preceding species, usually simple, 2′–15′ high, racemosely or corymbosely 1–several-flowered. Bracts distant, appressed, some of them commonly alternate; flowers solitary at the ends of the elongated erect peduncles, 3″–4″ long; peduncles sometimes 2′ long; corolla white, its lobes spatulate or obovate, obtuse, about 3 times the length of the calyx; ovary compressed; capsule about 2½″ high.

In swamps, southern Virginia to Florida and Louisiana. March–May.

Family 16. **MENYANTHÀCEAE** G. Don, Gard. Dict. 4: 167. 1837.

BUCKBEAN FAMILY.

Perennial aquatic or marsh herbs, with basal or alternate entire crenate or 3-foliolate leaves, and clustered regular perfect flowers. Calyx inferior, deeply 5-parted, persistent. Corolla funnelform to rotate, 5-lobed or 5-cleft, the lobes induplicate-valvate, at least in the bud. Stamens 5, borne on the corolla, and alternate with its lobes; filaments mostly short; anther-sacs longitudinally dehiscent; pollen-grains 3-angled. Ovary 1-celled, the 2 placentae sometimes intruded; style long, short or none. Fruit a capsule, or indehiscent.

Five genera and about 35 species, widely distributed.

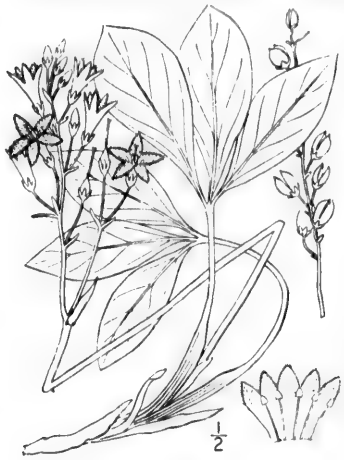
Leaves 3-foliolate; swamp plant. 1. *Menyanthes.*
Leaves simple, entire, cordate, floating. 2. *Limnanthemum.*

1. MENYÁNTHES L. Sp. Pl. 145. 1753.

A perennial glabrous marsh herb, with creeping rootstocks, alternate long-petioled 3-foliolate basal leaves, and white or purplish flowers, racemose or panicled on long lateral scapes or peduncles. Calyx 5-parted, the segments oblong or lanceolate. Corolla short-funnelform, 5-cleft, its lobes induplicate-valvate, fimbriate or bearded within, spreading. Stamens 5, inserted on the tube of the corolla; filaments filiform; anthers sagittate. Disk of 5 hypogynous glands. Ovary 1-celled; style subulate; stigma 2-lamellate. Capsule oval, indehiscent or finally rupturing. Seeds few, compressed-globose, shining. [Greek, perhaps mouth-flower; a name used by Theophrastus.]

A monotypic genus of the cooler parts of the northern hemisphere.

1. Menyanthes trifoliàta L. Buckbean. Marsh or Bean Trefoil. Bog-bean. (Fig. 2889.)



Menyanthes trifoliata L. Sp. Pl. 145. 1753.

Rootstock thick, scaly, sometimes 1° long, marked by the scars of bases of former petioles. Leaves 3-foliolate; petioles sheathing at the base, 2′–10′ long; leaflets oblong or obovate, entire, obtuse at the apex, narrowed to the sessile base, pinnately veined, 1½′–3′ long; raceme borne on a long scape-like naked peduncle, arising from the rootstock, 10–20-flowered; pedicels stout, 3″–12″ long, bracteolate at the base; flowers 5″–6″ long; calyx shorter than the white or purplish corolla, which is bearded with white hairs within; stamens shorter than the corolla and style exserted, or longer and style nearly included; capsule ovoid, obtuse, about 4″ long.

In bogs, Greenland to Alaska, south to Long Island, Pennsylvania, Minnesota and California. Also in Europe and Asia. May–July.

2. LIMNÁNTHEMUM S. G. Gmelin, Nov. Act. Acad. Petrop. **14**: 527. *pl. 17. f. 2.* 1769.

Aquatic perennial herbs, with slender rootstocks. Leaves floating, petioled, ovate or orbicular, deeply cordate, entire or repand, or the primary ones different; flowers yellow, or white, umbellate at the summit of filiform stems at the bases of the petioles, or axillary, often accompanied by a cluster of thick elongated root-like tubers. Calyx 5-parted. Corolla nearly rotate, deeply 5-cleft, the lobes induplicate-valvate in the bud, sometimes fimbriate on the margins. Stamens 5, inserted on the base of the corolla; filaments short; anthers sagittate, versatile. Ovary 1-celled; style short or none; stigma 2-lamellate. Capsule ovoid or oblong, indehiscent or irregularly bursting. Seeds numerous or few, smooth or rough. [Greek, pool-blossom.]

About 20 species, widely distributed in temperate and tropical regions. The following are the only ones known to occur in North America.

Flowers accompanied by tufts of root-like tubers; native species.
Floating leaves 1′–2′ long; flowers 3″–6″ broad, yellow; seeds smooth. 1. *L. lacunosum.*
Floating leaves 2′–6′ long; flowers 6″–10″ broad, white; seeds rough. 2. *L. aquaticum.*
Flowers not accompanied by tufts of tubers; flowers bright yellow, 1′ broad, or more; introduced species. 3. *L. nymphaeoides.*

1. Limnanthemum lacunòsum (Vent.) Griseb. Floating Heart. (Fig. 2890.)

Villarsia lacunosa Vent. Choix des Plantes, 9. 1803.
Limnanthemum lacunosum Griseb. Gent. 347. 1839.

Rootstock buried in the mud, the roots long and fibrous. Primary leaves monomorphous, submerged, short-petioled; stems (stolons) filiform, greatly elongated, sometimes 10° long, bearing a short-petioled floating leaf, an umbel of flowers and a cluster of narrow tubers at its summit, or some of the floating leaves on petioles as long as the stems; floating leaves ovate-orbicular, purplish beneath, 1′–2′ long, the basal sinus narrow or broad; pedicels slender; tubers linear-conic, ½′–1′ long; flowers yellow, 3″–6″ broad; style none; capsule ovoid, covered by the connivent calyx-segments; seeds numerous, smooth.

In ponds, Nova Scotia to Florida, west to Ontario, Minnesota and Louisiana. July–Aug.

2. Limnanthemum aquáticum (Walt.) Britton. Larger Floating Heart. (Fig. 2891.)

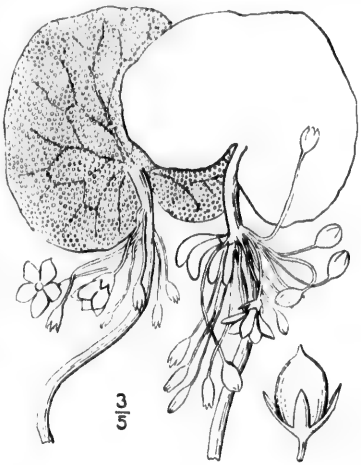
Anonymos aquatica Walt. Fl. Car. 109. 1788.

Villarsia aquatica Gmel. Syst. 1: 447. 1791.

Menyanthes trachysperma Michx. Fl. Bor. Am. 1: 126. 1803.

Limnanthemum trachyspermum A. Gray, Man. Ed. 5, 390. 1867.

Limnanthemum aquaticum Britton, Trans. N. Y. Acad. Sci. 9: 12. 1889.



Similar to the preceding species but stouter and larger. Floating leaves cordate-orbicular, thick, entire or repand, 2′–6′ long, spongy, and with the petioles and stolons densely covered with minute pits; primary leaves spatulate; pedicels slender, 1′–3′ long; tubers linear-oblong, thicker; corolla white, 6″–10″ broad; style none; seeds rough; capsule longer than the calyx.

In ponds, southern New Jersey and Delaware to Florida and Texas. Tubers apparently less abundant than in *L. lacunosum*. May–Aug.

3. Limnanthemum nymphaeoides (L.) Hoffm. & Link. Water Lily Floating Heart. (Fig. 2892.)

Menyanthes nymphaeoides L. Sp. Pl. 145. 1753.

Limnanthemum nymphaeoides Hoffm. & Link, Fl. Port. 1: 344. 1809.

Stems long, creeping or buried in the mud, ascending to the surface of the water, branched, the upper nodes bearing a petioled leaf and a cluster of flowers, or the upper internodes very short and their leaves apparently opposite. Petioles stout, mostly longer than the ovate-orbicular firm blades, which are 2′–4′ broad; pedicels stout, becoming 3′–6′ long, not accompanied by tufts of tubers; flowers bright yellow, 1′ in diameter, or more; corolla segments short-fringed.

Naturalized in ponds, District of Columbia. Native of Europe and Asia. May–July.

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